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July 19, 2004

Mr. Mike McCann
U.S. Nuclear Regulatory Commission
Region III
2443 Warrenville Road
Suite 210
Lisle, ILL 60532-4352

Dear Mr. McCann:

Subject: Submittal of final package for the Final Status Survey Report of JN-6 Facility under the USNRC Material License SNM-7

Battelle is submitting the final package for the Final Status Survey Report for JN-6 Facility at the West Jefferson, Ohio site under the U.S. NRC Materials License SNM-7 to request NRC review of the compiled data package. The JN-6 Facility is the former Battelle Security Gatehouse for the West Jefferson North Site and serves no purpose in the current operations of the site. Attached are two copies each of the following documents, which in aggregate represent the final package:

1) "Columbus Closure Project Characterization and Final Status Report for Building JN-6"- June 2004, as prepared by Closure Services, LLC
2) Letter dated June 7, 2004 from Tim Vitkus of ORISE to Mr. Rob Rothman-Columbus Closure Project Office, US Department of Energy
3) Letter and modified "Columbus Closure Project Characterization and Final Status Report for Building JN-6" dated July 7, 2004 from Closure Services, LLC

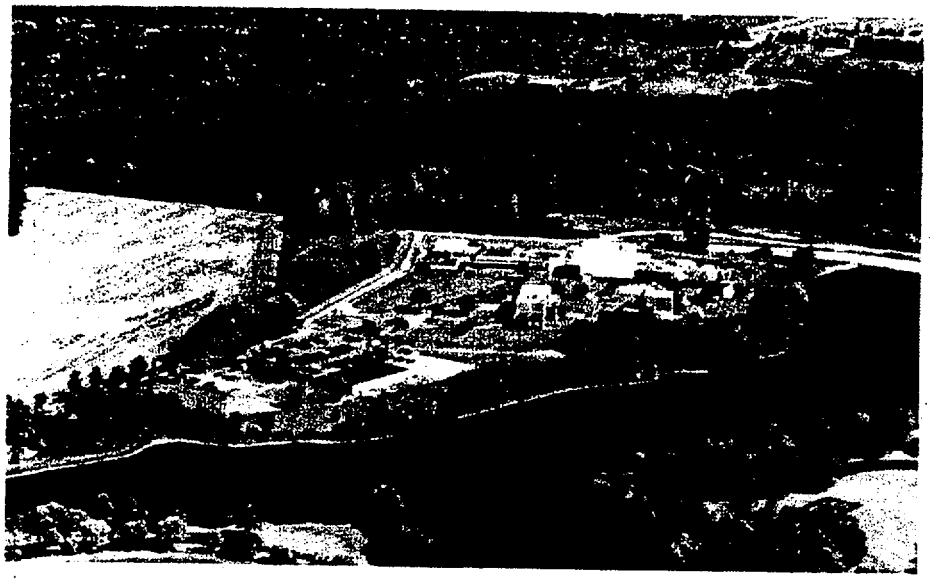
Following ORISE written concurrence with the Closure Services, LLC letter and modified report dated July 7, 2004 and concurrence by the Columbus Closure Project Office of DOE as well as the U.S. NRC it is the intent of Closure Services, LLC to demolish the JN-6 Facility to the slab as non-radiological work as the JN-6 Facility will be released radiologically without restrictions and transport the demolition debris to a landfill in Ohio that accepts construction demolition debris. Closure Services, LLC will be ready to begin JN-6 Facility demolition on or before August 2, 2004 based upon obtaining the aforementioned concurrences.

If you have any questions or comments concerning this request please do not hesitate to call me at 614-424-4098.

Sincerely,

Joe Jacobsen
BCLDP Radiation Safety Officer

JUL 20 2004



COLUMBUS CLOSURE PROJECT CHARACTERIZATION AND FINAL STATUS REPORT FOR BUILDING JN-6

To

Oak Ridge Institute for Science and Education
1299 Bethel Valley Road
P.O. Box 117
Oak Ridge, TN 37831-0177

From

ECC & E2 Closure Services
1425 State Route 142 East
West Jefferson, OH 43162

June 2004

Characterization and Final Status Report for Building JN-6

Prepared By:

Chris C. Peterson — 02 JUNE 04

Chris Peterson, Characterization Lead — Date

Approved By:

Scott Zoller — 06/02/04

Scott Zoller, Site Radiation Safety Officer — Date

Jim Staehr — 06/02/04

Jim Staehr, Project Manager — Date

David W. Garber — 6/2/04

Dave Garber, Quality Assurance Manager — Date

This report is a work prepared for the United States Government by ECC & E2 Closure Services, LLC. In no event shall either the United States Government or ECC & E2 Closure Services, LLC have any responsibility or liability for any consequences of any use, misuse, inability to use, or reliance upon the information as used by other parties contained herein, nor does it either warrant or otherwise represent in any way the accuracy, adequacy, efficacy, or applicability of the contents hereof to other parties.

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1.0 Introduction

This document contains the characterization and final status surveys of Building JN-6 located at the Columbus Closure Project (CCP), 1425 Plain City/Georgesville Road State Route 142 East, West Jefferson, OH 43162. The characterization and final status surveys were conducted in May, 2004 and encompass only the above ground structure. The subsurface soils will be released at a later date. A site map of the Columbus Closure Project is presented as Figure 1 of this report. JN-6 is a brick building that housed Battelle's West Jefferson security operations. The building is a two story structure and is approximately 20' by 25'. Waste management personnel surveyed the JN-6 Building and all hazardous or non-landfill conforming materials have been removed from the building. The removal of hazardous constituents included the removal of 12 asbestos containing floor tiles. The final status surveys were performed after hazardous materials and other interfering (ceiling tiles) items were removed from the building.

Surveys were conducted in accordance with DD-97-02, Rev. 0, "Radiological Characterization and Final Status Plan for Battelle Columbus Laboratory Decommissioning Project West Jefferson Site" (Reference 1). This work was performed under Work Instruction 2600. Radiological contamination limits used for the survey are those presented in Table 1 of DD-93-02, Rev. 0, "Surface Release Criteria Technical Basis Document," (Reference 2) and Table 1 of DD-93-03, Rev. 0, "Volumetric Release Criteria Technical Basis Document for Battelle Columbus Laboratory Decommissioning Project," (Reference 3).

To satisfy the requirements of NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment" (Reference 4) and Reference 3, a one square meter (1m x 1m) grid system was utilized to map Building JN-6 for characterization. The grids and their assigned numbers are presented as Figure 2.

Characterization scans and sampling were then performed in the gridded areas in accordance with Sections 5.1.3 and 5.1.4 of Reference 1. One hundred percent of the floor and walls up to two meters were scanned. Ten percent of walls above two meters, ceiling, and roof were scanned. This survey includes alpha and beta scans for all accessible surfaces. Static one-minute readings were performed in a grid when scan survey readings indicate net activity above the Decision Level Value (DLV).

A sample population was performed for the JN-6 Building. Thirty grids from the floor, walls, ceiling, and exterior were selected for additional (alpha and beta) static measurements as well as smear surveys.

As part of the release process, sample results from sink traps, drains and sumps were compared to the release criterion listed in Reference 3.

2.0 Training

Technicians were formally trained and qualified on applicable procedures prior to the initiation of a characterization surveys. Documentation of training is maintained by CCP Project Records.

Plans and procedures utilized for the survey follow:

DD-93-19, Rev. 5	Decommissioning Plan, Battelle Memorial Institute Columbus Operations
DD-97-02, Rev. 0	Radiological Characterization and Final Status Plan for BCLDP West Jefferson Site
SC-OP-002, Rev. 0	Facility Post-Decontamination Final Status Survey for Baseline Areas
SC-OP-004, Rev. 0	Radioactive Contamination Monitoring Requirements for Facility Surface Characterization
SC-OP-007, Rev. 0	Baseline Reference Values for Facility Radiological Characterization Surveys
SC-OP-010, Rev. 0	Establishing a Surface Reference Grid for Walls, Floors, and Ceilings for a Detailed Characterization Survey
SC-OP-025, Rev. 0	Facility Non-Baseline Final Status Survey
SC-SP-004.2, Rev. 3	Manual and Mechanical Collection of Surface and Subsurface Soil Samples in Support of Site Characterization
SC-SP-006, Rev. 3	Sampling of Sediment and Sludge for Chemical and Radiological Characterization
SC-SP-015, Rev. 1	Sampling of Special Materials for Characterization

3.0 Instrumentation

Direct reading gas proportional survey instruments sensitive to alpha and beta radiation are used to monitor facility surfaces for residual radioactive materials. Ludlum Model 43-20 gas proportional detectors (180 square centimeters (cm^2) detection areas) with Eberline ESP-2 meters were used to scan all building surfaces. The 180 cm^2 detector was used for all static measurements for the determination of residual radioactivity levels. P-10 gas was supplied via a continuous feed to the detectors. Thin, flat plate thorium-230 and technicium-99 sources traceable to the National Institute of Standards and Technology (NIST) per requirements of ANSI-N323a, "Radiation Protection Instrumentation Test and Calibration" (Reference 5) were used to calibrate the gas proportional instruments for alpha and beta detection, respectively. Source checks were conducted as required in Procedure SC-OP-004, Rev. 0, "Radioactive Contamination Monitoring Requirements for Facility Surface Characterization."

Other instrumentation used in the support of the final status survey include:

- A Ludlum Model 19 Exposure Rate Meter to perform gamma radiation measurements
- A VMS based Canberra Procount data acquisition system in conjunction with high purity germanium detectors for gamma spectroscopy
- A Tennelec Model LB5100 Simultaneous Alpha and Beta Gas Proportional Counter to count smear samples

4.0 Survey Results

4.1 *Exposure Rate Surveys*

The calculated mean background exposure rate and the 95 percent confidence intervals used for the CCP grounds are 8 ± 2 μR/hr. The exposure rate readings in Table 1 were individually compared to the mean background value of 8 ± 1 μR/hr in order to show compliance with the 5 μR /hr above background release criterion in Reference 3 (i.e., readings must be less than 13 μR/hr to be compliant). All exposure rates were less than the 5 μR /hr release criterion and are presented as Table 1.

4.2 *Drain and Sump Sampling*

Liquid samples were collected from the drains and sump located in JN-6. No radionuclides were detected in the analyses. Radioanalytical analyses are presented in Table 2.

4.3 *Direct Surveys*

Final status surveys for total (fixed and removable) were less than the release criteria defined in Reference 2. Tables 3 through 8 present scanning and static survey results from the JN-6 surveys. Numerical values in the tables represent residual activities and were computed as follows:

$$\frac{dpm}{100cm^2} = \frac{C_g - C_b}{(T)(Eff)(\frac{180}{100})}$$

Where:

C_g = Gross counts (counts/180 cm2)
C_b = Mean value of background counts (counts/180 cm2)
T = count time (min) [one minute count time is standard]
Eff = average instrument efficiency

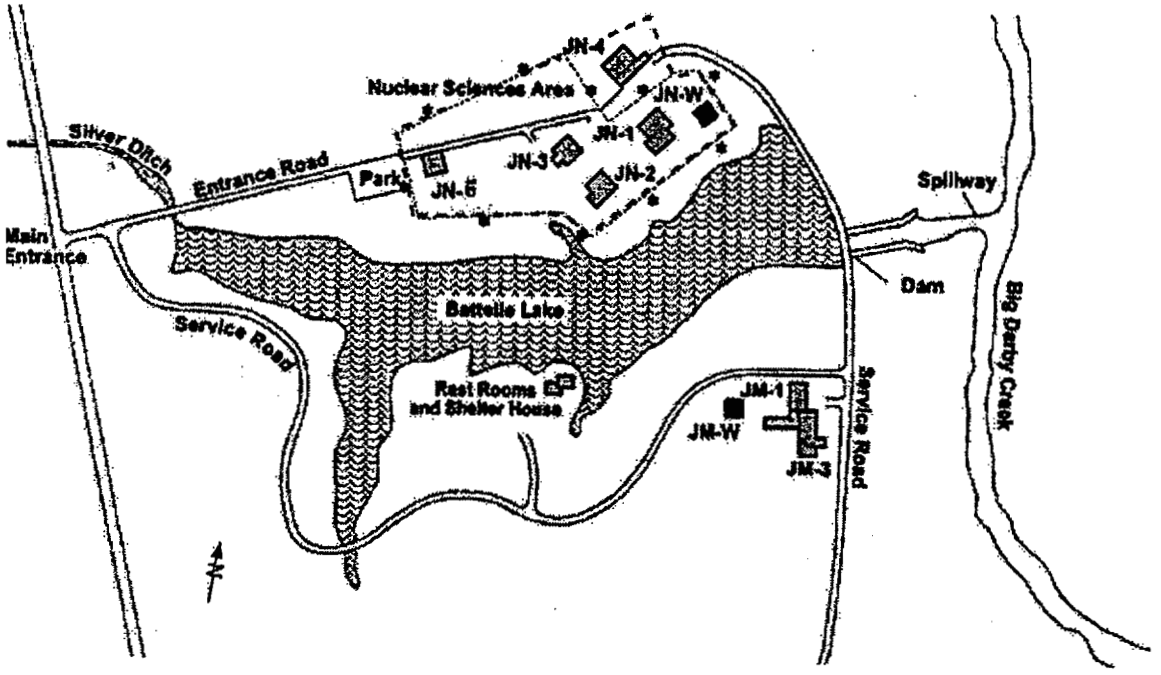
5.0 Conclusions

The final status survey results demonstrate that the radiological endpoint criteria objectives of the NRC-approved decommissioning plan DD-93-19, Rev. 5, "Decommissioning Plan for the Battelle Memorial Institute Columbus Operations" (Reference 6) have been met for the areas addressed by this effort. These criteria are described in References 2 and 3.

6.0 References

1. Battelle, 2000. "Radiological Characterization and Final Status Survey Plan for Battelle Columbus Laboratory Decommissioning Project West Jefferson Site," DD-97-02, Revision 0
2. Battelle, 1993. "Surface Release Criteria Technical Basis Document," DD-93-02, Revision 0.
3. Battelle, 1993. "Volumetric Release Criteria Technical Basis Document for Battelle Columbus Laboratories Decommissioning Project," DD-93-03, Revision 0.
4. Oak Ridge Associated Universities (ORAU), 1992. "Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment" NUREG/CR-5849, ORAU-92/C57. prepared for the Nuclear Regulatory Commission by the Environmental Survey and Assessment Program, Energy/Environmental Systems Division, ORAU, 1992.
5. ANSI-N323a, 1997. "Radiation Protection Instrumentation Test and Calibration."
6. Battelle, 2003. "Decommissioning Plan for the Battelle Memorial Institute Columbus Operations," DD-93-19, Revision 5.

Figure 1
Site Map



Building: JN-6 Guard Station

Figure 2
JN-6 Grid Numbers

First Floor

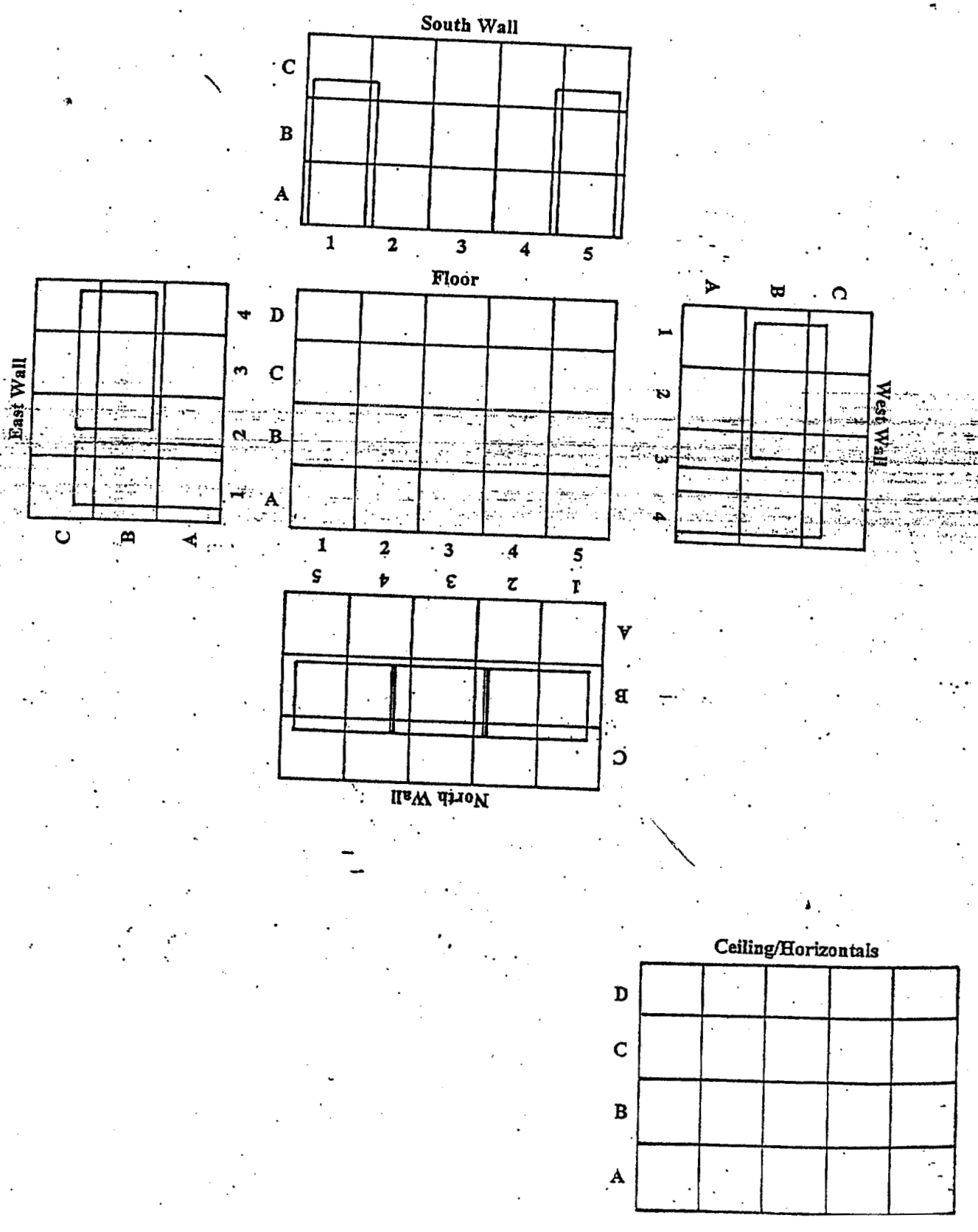
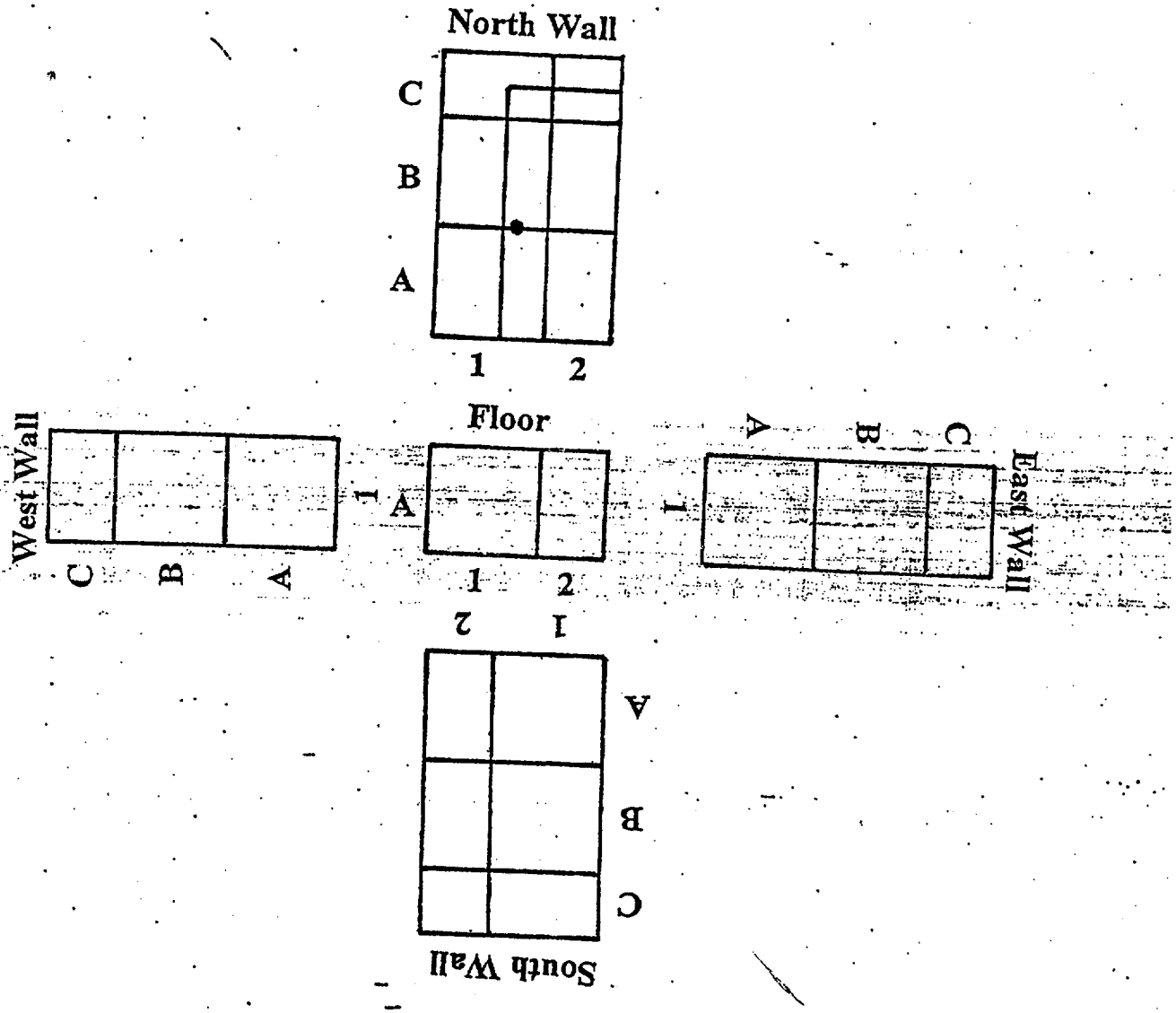


Figure 2
JN-6 Grid Numbers

Building: JN-6
Guard Station

Restroom



Ceiling/Horizontals

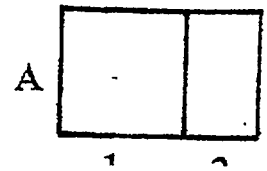
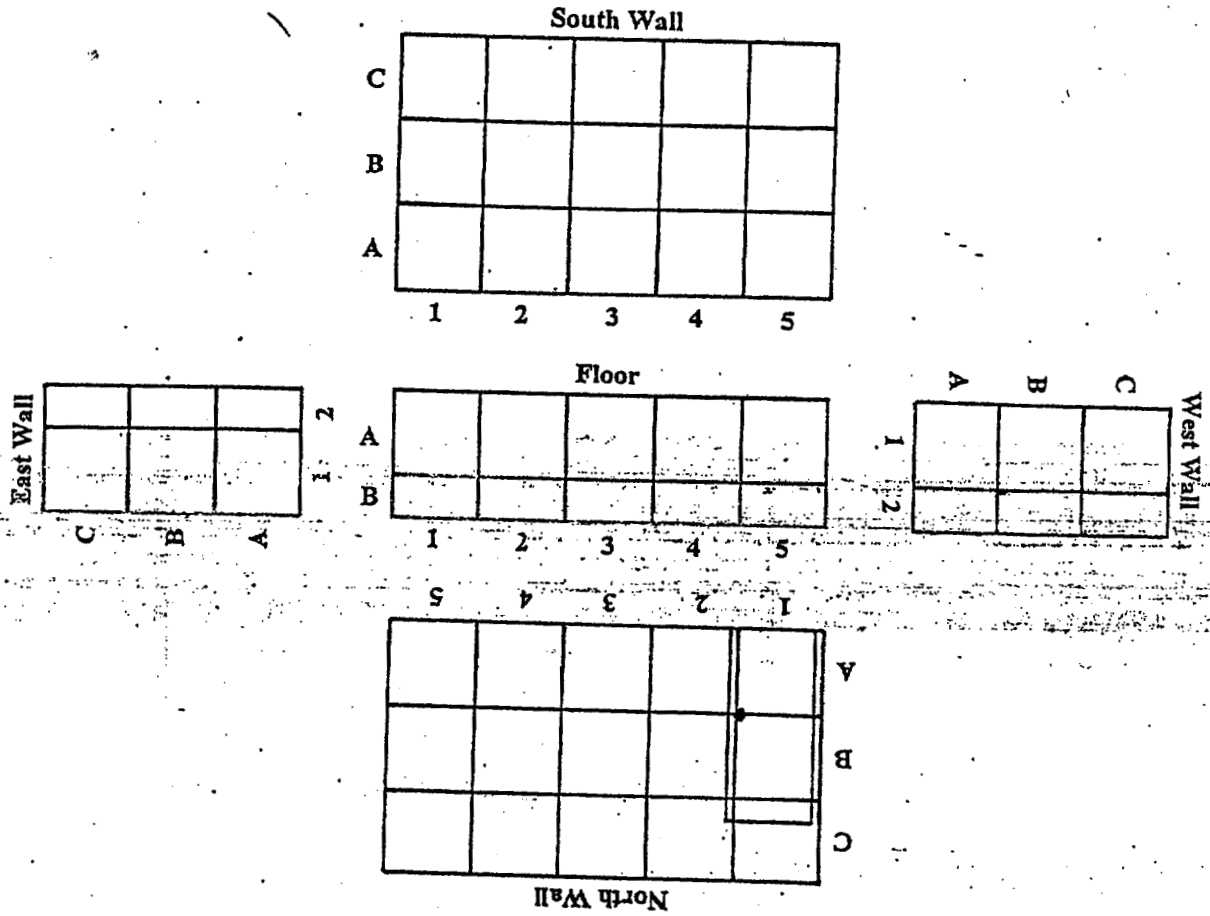


Figure 2
JN-6 Grid Numbers

Building: JN-6
Guard Station

Utility Room



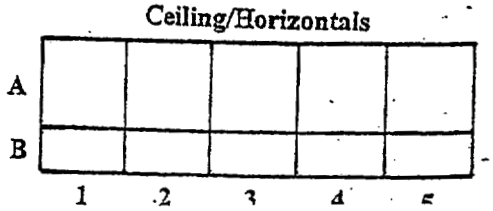


Figure 2
JN-6 Grid Numbers

Building: JN-6
Guard Station
Stairwell

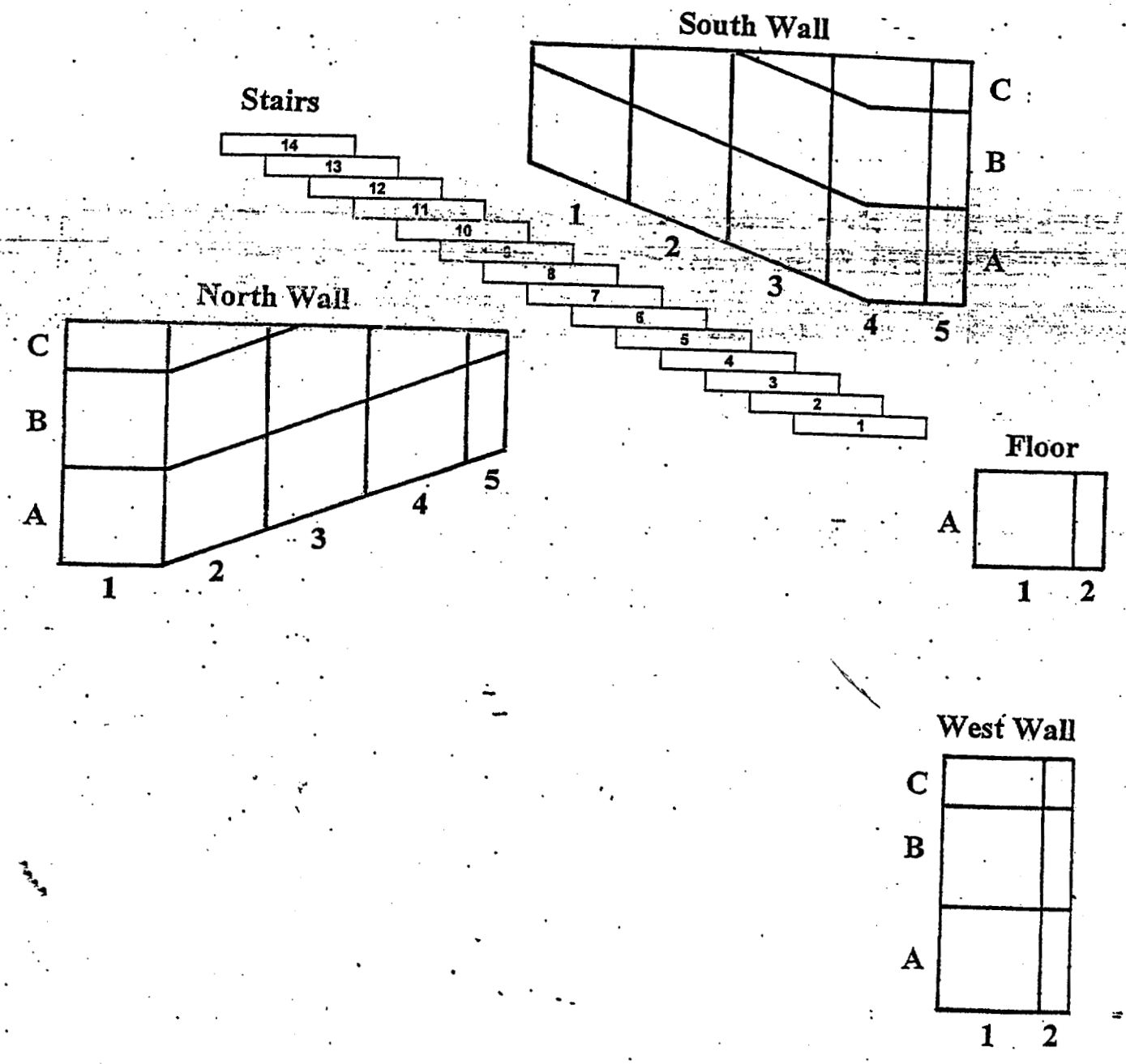


Figure 2
JN-6 Grid Numbers

Building: JN-6
Guard Station

Second Floor

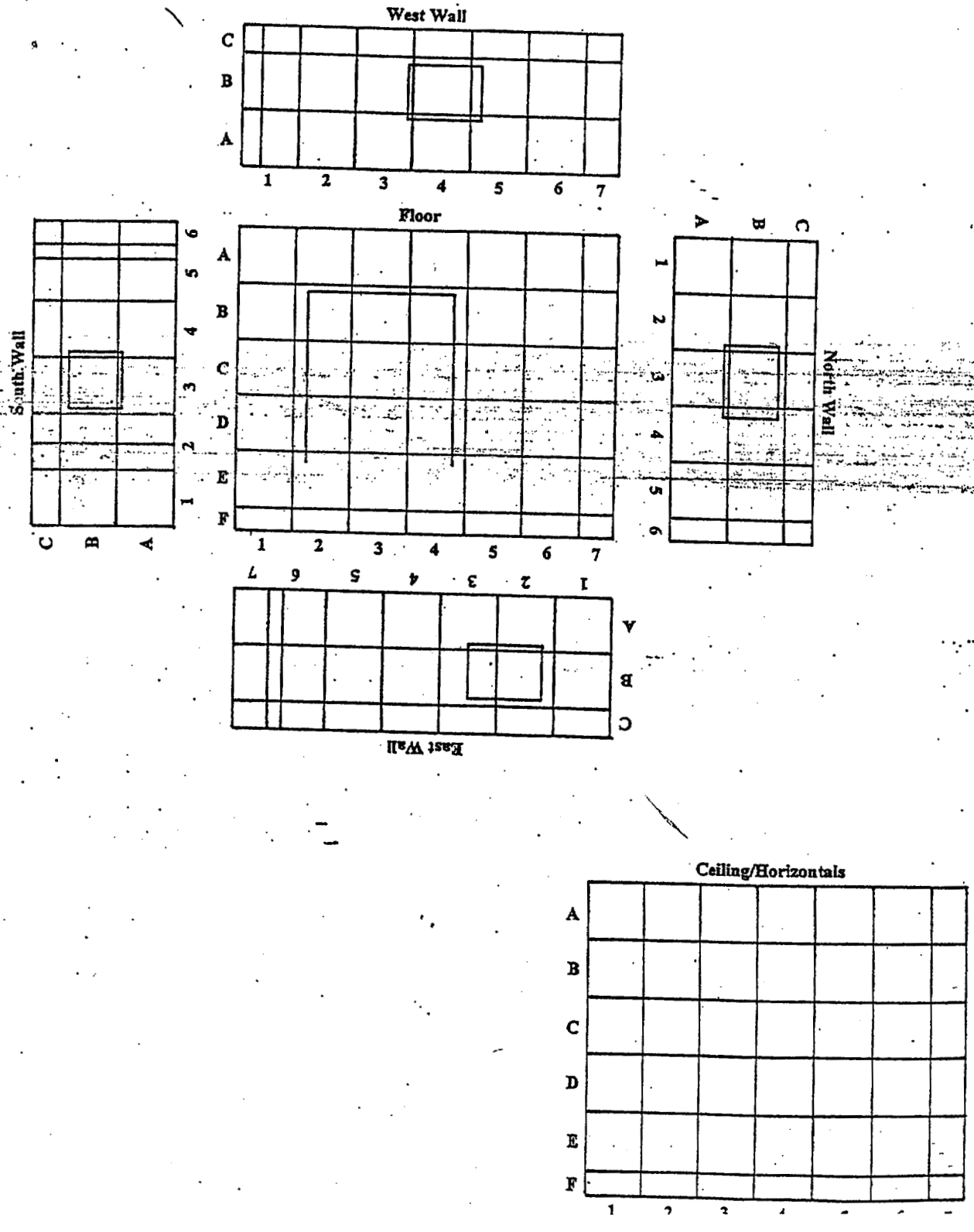


Figure 2
JN-6 Grid Numbers

Building: JN-6
Guard Station

Exterior Surfaces

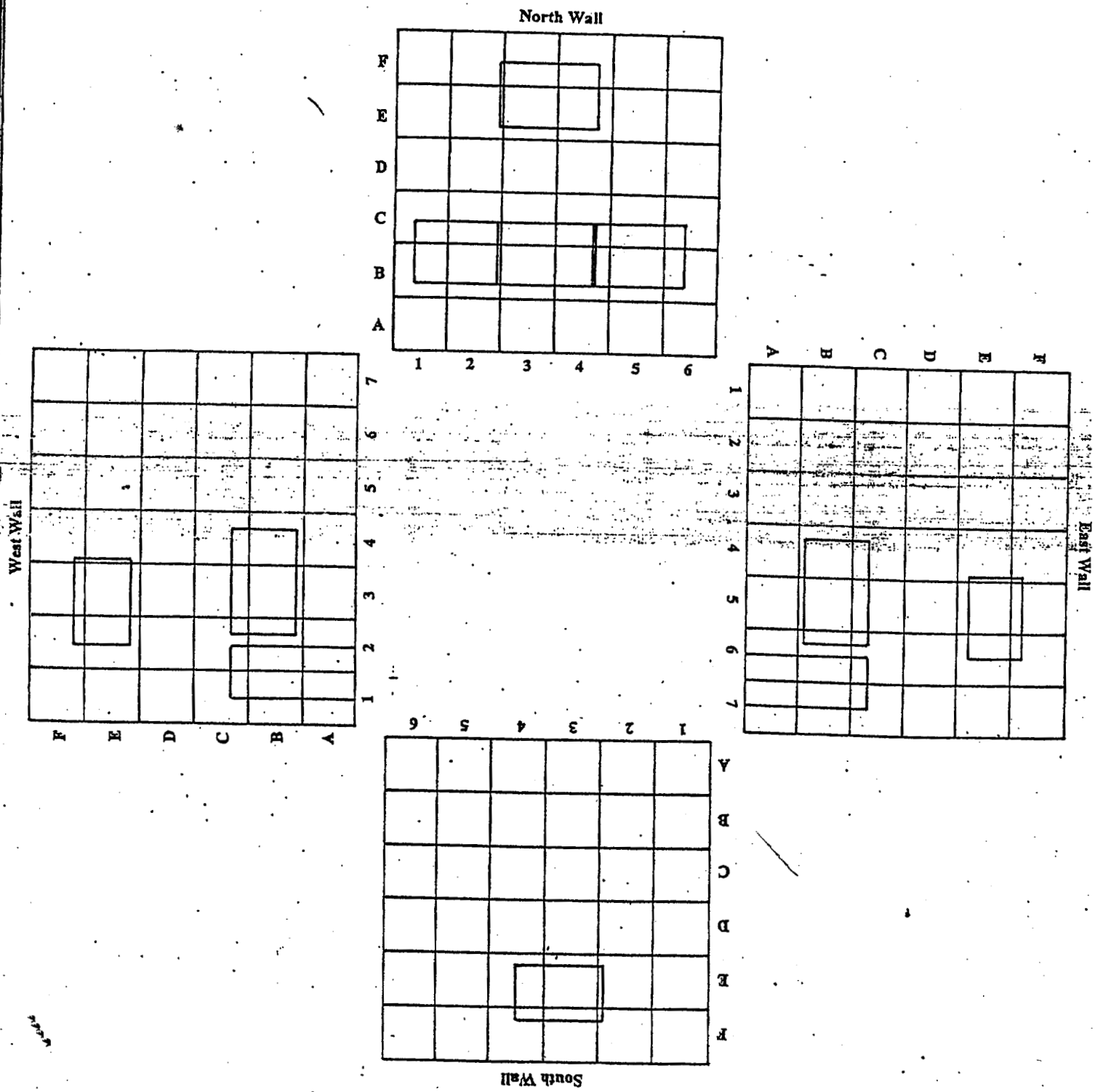


Figure 2
JN-6 Grid Numbers

Building: JN-6
Guard Station

Roof

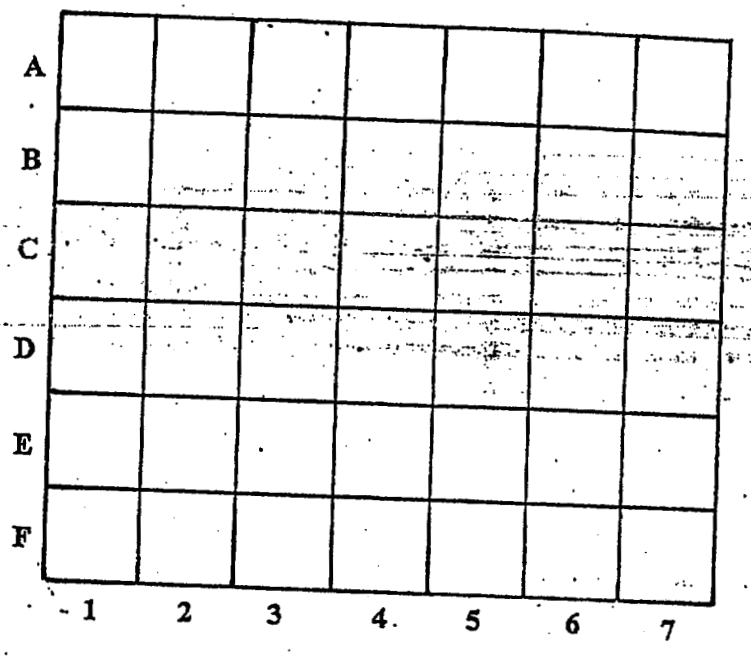


Table 1
JN-6 Exposure Rate Surveys

Grid	Surface Medium	Results in µR/hr Gamma	
		Contact	1 Meter
A1	1Floor	9	9
A5	1Floor	10	8
C3	1Floor	9	10
D1	1Floor	10	10
D5	1Floor	7	8
1	SStep	10	9
7	SStep	10	8
14	SStep	10	10
A1	MFloor	10	10
A2	MFloor	10	10
A1	UFloor	7	10
A3	UFloor	8	11
A5	UFloor	8	10
B1	UFloor	7	8
B5	UFloor	7	8
A1	2Floor	11	10
A7	2Floor	10	10
C4	2Floor	8	8
E1	2Floor	11	10
E7	2Floor	11	12

Table 2
JN-6 Radioanalytical Results

Analytical Parameter	RL04-0211 (Utility Room Sump)		RL04-0212 (Utility Room Drain)		RL04-0213 (Mens Room Sink)	
	Result (pCi/g)	2σ (pCi/g)	Result (pCi/g)	2σ (pCi/g)	Result (pCi/g)	2σ (pCi/g)
Be-7	< 0.94	0.00	< 0.89	0.00	< 0.98	0.00
K-40	< 1.67	0.00	< 1.51	0.00	< 1.46	0.00
Co-58	< 0.13	0.00	< 0.10	0.00	< 0.12	0.00
Co-60	< 0.10	0.00	< 0.11	0.00	< 0.11	0.00
Zn-65	< 0.26	0.00	< 0.24	0.00	< 0.23	0.00
Nb-94	< 0.11	0.00	< 0.10	0.00	< 0.11	0.00
Ag-108M	< 0.10	0.00	< 0.10	0.00	< 0.10	0.00
Sb-125	< 0.35	0.00	< 0.31	0.00	< 0.29	0.00
I-131	< 0.16	0.00	< 0.19	0.00	< 0.18	0.00
Ba-133	< 0.15	0.00	< 0.15	0.00	< 0.13	0.00
Cs-134	< 0.11	0.00	< 0.12	0.00	< 0.12	0.00
Cs-137	< 0.13	0.00	< 0.14	0.00	< 0.14	0.00
Eu-152	< 0.24	0.00	< 0.22	0.00	< 0.25	0.00
Eu-154	< 0.17	0.00	< 0.15	0.00	< 0.18	0.00
Tl-208	< 0.14	0.00	< 0.14	0.00	< 0.14	0.00
Bi-212	< 0.16	0.00	< 0.15	0.00	< 0.16	0.00
Pb-212	< 0.21	0.00	< 0.21	0.00	< 0.21	0.00
Bi-214	< 0.31	0.00	< 0.30	0.00	< 0.30	0.00
Pb-214	< 0.25	0.00	< 0.28	0.00	< 0.29	0.00
Ra-226	< 0.29	0.00	< 0.31	0.00	< 0.31	0.00
Ac-228	< 0.45	0.00	< 0.48	0.00	< 0.48	0.00
Th-234	< 1.81	0.00	< 1.80	0.00	< 1.86	0.00
U-235	< 0.18	0.00	< 0.19	0.00	< 0.19	0.00
Np-239	< 0.27	0.00	< 0.25	0.00	< 0.24	0.00
Am-241	< 0.15	0.00	< 0.14	0.00	< 0.16	0.00

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	1N.Wall	CB	492	286	400	462	62	0.281	1.8	122.58	20	N/A	17	N/A	N/A	0.209	1.8	N/A	1.74	0.59
A2	1N.Wall	CB	492	286	400	322	-78	0.281	1.8	-154.21	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	1N.Wall	CB	492	286	400	381	-19	0.281	1.8	-37.56	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	1N.Wall	CB	492	286	400	338	-62	0.281	1.8	-122.58	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	1N.Wall	CB	492	286	400	393	-7	0.281	1.8	-13.84	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1N.Wall	CB	492	286	400	342	-58	0.281	1.8	-114.67	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	1N.Wall	CB	492	286	400	277	-123	0.281	1.8	-243.18	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	1E.Wall	CB	492	286	400	272	-128	0.281	1.8	-253.06	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	1E.Wall	CB	492	286	400	339	-61	0.281	1.8	-120.60	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	1E.Wall	CB	492	286	400	359	-41	0.281	1.8	-81.06	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	1E.Wall	CB	492	286	400	295	-105	0.281	1.8	-207.59	20	N/A	17	N/A	N/A	0.209	1.8	N/A	-0.07	-0.47
A1	1W.Wall	CB	492	286	400	281	-119	0.281	1.8	-235.27	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	1W.Wall	CB	492	286	400	314	-86	0.281	1.8	-170.03	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	1W.Wall	CB	492	286	400	271	-129	0.281	1.8	-255.04	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1W.Wall	CB	492	286	400	264	-136	0.281	1.8	-268.88	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	1W.Wall	CB	492	286	400	207	-193	0.281	1.8	-381.57	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1N.Wall	L	466	275	384	311	-73	0.281	1.8	-144.33	18	N/A	15	N/A	N/A	0.209	1.8	N/A	3.55	5.94
B2	1N.Wall	L	466	275	384	313	-71	0.281	1.8	-140.37	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	1N.Wall	L	466	275	384	326	-58	0.281	1.8	-114.67	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	1N.Wall	L	466	275	384	315	-69	0.281	1.8	-136.42	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	1N.Wall	L	466	275	384	271	-113	0.281	1.8	-223.41	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	1E.Wall	L	466	275	384	369	-15	0.281	1.8	-29.66	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1E.Wall	L	466	275	384	338	-46	0.281	1.8	-90.95	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	1E.Wall	L	466	275	384	325	-59	0.281	1.8	-116.65	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	1E.Wall	L	466	275	384	312	-72	0.281	1.8	-142.35	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	1E.Wall	L	466	275	384	304	-80	0.281	1.8	-158.17	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	1S.Wall	L	466	275	384	294	-90	0.281	1.8	-177.94	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	-0.47
A2	1S.Wall	L	466	275	384	271	-113	0.281	1.8	-223.41	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	1S.Wall	L	466	275	384	326	-58	0.281	1.8	-114.67	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	1S.Wall	L	466	275	384	282	-102	0.281	1.8	-201.66	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	1S.Wall	L	466	275	384	313	-71	0.281	1.8	-140.37	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1S.Wall	L	466	275	384	302	-82	0.281	1.8	-162.12	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	1S.Wall	L	466	275	384	295	-89	0.281	1.8	-175.96	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	1S.Wall	L	466	275	384	273	-111	0.281	1.8	-219.45	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	1S.Wall	L	466	275	384	283	-101	0.281	1.8	-199.68	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	1S.Wall	L	466	275	384	243	-141	0.281	1.8	-278.77	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	1W.Wall	L	466	275	384	281	-103	0.281	1.8	-203.64	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	-1.53
A4	1W.Wall	L	466	275	384	371	-13	0.281	1.8	-25.70	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1W.Wall	L	466	275	384	305	-79	0.281	1.8	-156.19	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	1W.Wall	L	466	275	384	277	-107	0.281	1.8	-211.55	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	1W.Wall	L	466	275	384	235	-149	0.281	1.8	-294.58	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	1W.Wall	L	466	275	384	255	-129	0.281	1.8	-255.04	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	1Floor	L	466	277	384	389	5	0.281	1.8	9.89	18	N/A	15	N/A	N/A	0.209	1.8	N/A	1.74	-0.47
A2	1Floor	L	466	277	384	366	-18	0.281	1.8	-35.59	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	1Floor	L	466	277	384	374	-10	0.281	1.8	-19.77	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	1Floor	L	466	277	384	398	14	0.281	1.8	27.68	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	1Floor	L	466	277	384	383	-1	0.281	1.8	-1.98	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	1Floor	L	466	277	384	366	-18	0.281	1.8	-35.59	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	1Floor	L	466	277	384	325	-59	0.281	1.8	-116.65	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	1Floor	L	466	277	384	341	-43	0.281	1.8	-85.01	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	1Floor	L	466	277	384	315	-69	0.281	1.8	-136.42	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	1Floor	L	466	277	384	396	12	0.281	1.8	23.72	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C1	1Floor	L	466	277	384	272	-112	0.281	1.8	-221.43	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	-2.6
C2	1Floor	L	466	277	384	292	-92	0.281	1.8	-181.89	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C3	1Floor	L	466	277	384	298	-86	0.281	1.8	-170.03	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
C4	1Floor	L	466	277	384	277	-107	0.281	1.8	-211.55	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C5	1Floor	L	466	277	384	293	-91	0.281	1.8	-179.91	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D1	1Floor	L	466	277	384	278	-106	0.281	1.8	-209.57	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D2	1Floor	L	466	277	384	253	-131	0.281	1.8	-259.00	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D3	1Floor	L	466	277	384	313	-71	0.281	1.8	-140.37	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D4	1Floor	L	466	277	384	290	-94	0.281	1.8	-185.84	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D5	1Floor	L	466	277	384	271	-113	0.281	1.8	-223.41	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	SNWall	L	466	265	384	267	-117	0.277	1.8	-234.66	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
A2	SNWall	L	466	265	384	254	-130	0.277	1.8	-260.73	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	SNWall	L	466	265	384	261	-123	0.277	1.8	-246.69	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	SNWall	L	466	265	384	256	-128	0.277	1.8	-256.72	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	SNWall	L	466	265	384	258	-126	0.277	1.8	-252.71	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	SNWall	L	466	265	384	227	-157	0.277	1.8	-314.88	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	SNWall	L	466	265	384	248	-136	0.277	1.8	-272.76	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	SNWall	L	466	265	384	261	-123	0.277	1.8	-246.69	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	SNWall	L	466	265	384	267	-117	0.277	1.8	-234.66	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B5	SNWall	L	466	265	384	241	-143	0.277	1.8	-286.80	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	1.66
A1	SSWall	L	466	265	384	281	-103	0.277	1.8	-206.58	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	SSWall	L	466	265	384	243	-141	0.277	1.8	-282.79	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	SSWall	L	466	265	384	263	-121	0.277	1.8	-242.68	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	SSWall	L	466	265	384	251	-133	0.277	1.8	-266.75	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	SSWall	L	466	265	384	249	-135	0.277	1.8	-270.76	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	SSWall	L	466	265	384	277	-107	0.277	1.8	-214.60	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	SSWall	L	466	265	384	288	-96	0.277	1.8	-192.54	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	SSWall	L	466	265	384	318	-66	0.277	1.8	-132.37	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	SSWall	L	466	265	384	309	-75	0.277	1.8	-150.42	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	1.66
B5	SSWall	L	466	265	384	284	-100	0.277	1.8	-200.56	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	SWWall	CB	492	265	400	344	-56	0.277	1.8	-112.31	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
B1	SWWall	CB	492	265	400	340	-60	0.277	1.8	-120.34	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	Sfloor	CF	635	265	544	318	-226	0.277	1.8	-453.27	24	N/A	21	N/A	N/A	0.228	1.8	N/A	-0.07	-1.53
1	SStep	L	466	241	384	274	-110	0.277	1.8	-220.62	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
2	SStep	L	466	241	384	290	-94	0.277	1.8	-188.53	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
3	SStep	L	466	241	384	269	-115	0.277	1.8	-230.65	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
4	SStep	L	466	241	384	411	27	0.277	1.8	54.15	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
5	SStep	L	466	241	384	249	-135	0.277	1.8	-270.76	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
6	SStep	L	466	241	384	327	-57	0.277	1.8	-114.32	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
7	SStep	L	466	241	384	265	-119	0.277	1.8	-238.67	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
8	SStep	L	466	241	384	235	-149	0.277	1.8	-298.84	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
9	SStep	L	466	241	384	351	-33	0.277	1.8	-66.19	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
10	SStep	L	466	241	384	238	-146	0.277	1.8	-292.82	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	-1.53
11	SStep	L	466	241	384	229	-155	0.277	1.8	-310.87	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
12	SStep	L	466	241	384	328	-56	0.277	1.8	-112.31	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
13	SStep	L	466	241	384	343	-41	0.277	1.8	-82.23	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
14	SStep	L	466	241	384	297	-87	0.277	1.8	-174.49	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	Ceiling	L	466	292	384	362	-22	0.281	1.8	-43.50	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	-2.6
B4	Ceiling	L	466	292	384	372	-12	0.281	1.8	-23.72	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	Horiz.	L	466	292	384	250	-134	0.281	1.8	-264.93	18	N/A	15	N/A	N/A	0.209	1.8	N/A	1.74	2.73
C4	Horiz.	L	466	292	384	330	-54	0.281	1.8	-106.76	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	MFloor	L	466	292	384	315	-69	0.281	1.8	-136.42	18	N/A	15	N/A	N/A	0.209	1.8	N/A	1.74	0.59
A2	MFloor	L	466	292	384	311	-73	0.281	1.8	-144.33	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	MEWall	CB	492	287	400	336	-64	0.281	1.8	-126.53	20	N/A	17	N/A	N/A	0.209	1.8	N/A	-0.07	1.66
B1	MEWall	CB	492	287	400	285	-115	0.281	1.8	-227.36	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C1	MEWall	CB	492	287	400	279	-121	0.281	1.8	-239.22	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	MSWall	L	466	287	384	261	-123	0.281	1.8	-243.18	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	3.8
A2	MSWall	L	466	287	384	271	-113	0.281	1.8	-223.41	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Ambient	Mean	Scan Measurements Gross Counts	Net Counts	Instrument EFF	CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Ambient	Mean	Scan Measurements Gross Counts	Net Counts	Instrument EFF	CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Beta
B1	MSWall	L	466	287	384	273	-111	0.281	1.8	-219.45	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	MSWall	L	466	287	384	240	-144	0.281	1.8	-284.70	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	MWWall	L	466	287	384	270	-114	0.281	1.8	-225.39	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	MWWall	L	466	287	384	295	-89	0.281	1.8	-175.96	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	MNWall	L	466	287	384	188	-196	0.281	1.8	-387.50	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	MNWall	L	466	287	384	253	-131	0.281	1.8	-259.00	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	MNWall	L	466	287	384	214	-170	0.281	1.8	-336.10	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	MNWall	L	466	287	384	196	-188	0.281	1.8	-371.69	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	MCeiling	L	466	287	384	329	-55	0.281	1.8	-108.74	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	1.66
A1	UFloor	CF	635	287	544	284	-260	0.281	1.8	-514.04	24	N/A	21	N/A	N/A	0.209	1.8	N/A	-0.07	1.66
A2	UFloor	CF	635	287	544	370	-174	0.281	1.8	-344.01	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	UFloor	CF	635	287	544	355	-189	0.281	1.8	-373.67	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	UFloor	CF	635	287	544	380	-164	0.281	1.8	-324.24	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	UFloor	CF	635	287	544	387	-157	0.281	1.8	-310.40	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	UFloor	CF	635	287	544	251	-293	0.281	1.8	-579.28	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	UFloor	CF	635	287	544	382	-162	0.281	1.8	-320.28	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	UFloor	CF	635	287	544	325	-219	0.281	1.8	-432.98	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	UFloor	CF	635	287	544	293	-251	0.281	1.8	-496.24	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	UFloor	CF	635	287	544	386	-158	0.281	1.8	-312.38	24	N/A	21	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	UFloor	L	466	287	384	288	-96	0.281	1.8	-189.80	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	4.87
A3	UFloor	L	466	287	384	262	-122	0.281	1.8	-241.20	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	2Floor	L	466	241	384	324	-60	0.277	1.8	-120.34	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
A2	2Floor	L	466	241	384	307	-77	0.277	1.8	-154.43	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2Floor	L	466	241	384	253	-131	0.277	1.8	-262.74	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2Floor	L	466	241	384	247	-137	0.277	1.8	-274.77	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2Floor	L	466	241	384	372	-12	0.277	1.8	-24.07	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	2Floor	L	466	241	384	307	-77	0.277	1.8	-154.43	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A7	2Floor	L	466	241	384	296	-88	0.277	1.8	-176.49	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2Floor	L	466	241	384	347	-37	0.277	1.8	-74.21	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	2Floor	L	466	241	384	259	-125	0.277	1.8	-250.70	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	2Floor	L	466	241	384	238	-146	0.277	1.8	-292.82	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	1.66
B4	2Floor	L	466	241	384	361	-23	0.277	1.8	-46.13	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B5	2Floor	L	466	241	384	243	-141	0.277	1.8	-282.79	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B6	2Floor	L	466	241	384	241	-143	0.277	1.8	-286.80	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B7	2Floor	L	466	241	384	311	-73	0.277	1.8	-146.41	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C1	2Floor	L	466	241	384	252	-132	0.277	1.8	-264.74	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C2	2Floor	L	466	241	384	272	-112	0.277	1.8	-224.63	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C3	2Floor	L	466	241	384	278	-106	0.277	1.8	-212.60	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C4	2Floor	L	466	241	384	327	-57	0.277	1.8	-114.32	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C5	2Floor	L	466	241	384	251	-133	0.277	1.8	-266.75	18	N/A	15	N/A	N/A	0.228	1.8	N/A	1.74	1.66
C6	2Floor	L	466	241	384	287	-97	0.277	1.8	-194.54	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C7	2Floor	L	466	241	384	243	-141	0.277	1.8	-282.79	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D1	2Floor	L	466	241	384	301	-83	0.277	1.8	-166.47	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D2	2Floor	L	466	241	384	291	-93	0.277	1.8	-186.52	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D3	2Floor	L	466	241	384	233	-151	0.277	1.8	-302.85	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D4	2Floor	L	466	241	384	288	-96	0.277	1.8	-192.54	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D5	2Floor	L	466	241	384	259	-125	0.277	1.8	-250.70	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D6	2Floor	L	466	241	384	306	-78	0.277	1.8	-156.44	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D7	2Floor	L	466	241	384	253	-131	0.277	1.8	-262.74	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	0.59
E1	2Floor	L	466	241	384	257	-127	0.277	1.8	-254.71	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
E2	2Floor	L	466	241	384	265	-119	0.277	1.8	-238.67	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
E3	2Floor	L	466	241	384	223	-161	0.277	1.8	-322.90	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
E4	2Floor	L	466	241	384	236	-148	0.277	1.8	-296.83	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
E5	2Floor	L	466	241	384	243	-141	0.277	1.8	-282.79	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
E6	2Floor	L	466	241	384	281	-103	0.277	1.8	-206.58	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
E7	2Floor	L	466	241	384	307	-77	0.277	1.8	-154.43	18	N/A	15	N/A	N/A	0.228	1.8	N/A	1.74	-1.53
A1	2NWall	L	466	241	384	231	-153	0.277	1.8	-306.86	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	2.73
A3	2NWall	L	466	241	384	251	-133	0.277	1.8	-266.75	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2NWall	L	466	241	384	247	-137	0.277	1.8	-274.77	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2NWall	L	466	241	384	284	-100	0.277	1.8	-200.56	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	2NWall	L	466	241	384	241	-143	0.277	1.8	-286.80	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	2NWall	L	466	241	384	227	-157	0.277	1.8	-314.88	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2EWall	L	466	241	384	236	-148	0.277	1.8	-296.83	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2EWall	L	466	241	384	272	-112	0.277	1.8	-224.63	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	2EWall	L	466	241	384	289	-95	0.277	1.8	-190.53	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	2EWall	L	466	241	384	212	-172	0.277	1.8	-344.97	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	-1.53
A1	2SWall	L	466	241	384	243	-141	0.277	1.8	-282.79	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2SWall	L	466	241	384	276	-108	0.277	1.8	-216.61	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2SWall	L	466	241	384	268	-116	0.277	1.8	-232.65	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2SWall	L	466	241	384	203	-181	0.277	1.8	-363.02	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2SWall	L	466	241	384	220	-164	0.277	1.8	-328.92	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	2SWall	L	466	241	384	243	-141	0.277	1.8	-282.79	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2SWall	L	466	241	384	251	-133	0.277	1.8	-266.75	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	2SWall	L	466	241	384	221	-163	0.277	1.8	-326.92	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	2SWall	L	466	241	384	253	-131	0.277	1.8	-262.74	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
B4	2SWall	L	466	241	384	239	-145	0.277	1.8	-290.81	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B5	2SWall	L	466	241	384	263	-121	0.277	1.8	-242.68	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B6	2SWall	L	466	241	384	310	-74	0.277	1.8	-148.42	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	2WWall	L	466	241	384	239	-145	0.277	1.8	-290.81	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2WWall	L	466	241	384	241	-143	0.277	1.8	-286.80	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	2WWall	L	466	241	384	291	-93	0.277	1.8	-186.52	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2WWall	L	466	241	384	255	-129	0.277	1.8	-258.72	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B5	2WWall	L	466	241	384	233	-151	0.277	1.8	-302.85	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B6	2WWall	L	466	241	384	264	-120	0.277	1.8	-240.67	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	0.59
A1	2Sub A	L	466	241	384	294	-90	0.277	1.8	-180.51	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2Sub A	L	466	241	384	238	-146	0.277	1.8	-292.82	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2Sub B	L	466	241	384	247	-137	0.277	1.8	-274.77	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	2Sub B	L	466	241	384	267	-117	0.277	1.8	-234.66	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2Sub B	L	466	241	384	271	-113	0.277	1.8	-226.63	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	2Sub C	L	466	241	384	257	-127	0.277	1.8	-254.71	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2Sub C	L	466	241	384	235	-149	0.277	1.8	-298.84	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2Sub C	L	466	241	384	213	-171	0.277	1.8	-342.96	18	N/A	15	N/A	N/A	0.228	1.8	N/A	3.55	8.08
A6	2EWall	L	466	241	384	247	-137	0.277	1.8	-274.77	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A7	2EWall	L	466	241	384	245	-139	0.277	1.8	-278.78	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B6	2EWall	L	466	241	384	241	-143	0.277	1.8	-286.80	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B7	2EWall	L	466	241	384	248	-136	0.277	1.8	-272.76	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2Sub A	L	466	241	384	253	-131	0.277	1.8	-262.74	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2Sub C	L	466	241	384	234	-150	0.277	1.8	-300.84	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	2NWall	CB	492	243	400	471	71	0.277	1.8	142.40	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
A2	2NWall	CB	492	243	400	362	-38	0.277	1.8	-76.21	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2NWall	CB	492	243	400	371	-29	0.277	1.8	-58.16	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2NWall	CB	492	243	400	334	-66	0.277	1.8	-132.37	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2NWall	CB	492	243	400	374	-26	0.277	1.8	-52.15	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	2NWall	CB	492	243	400	281	-119	0.277	1.8	-238.67	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2NWall	CB	492	243	400	345	-55	0.277	1.8	-110.31	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	2NWall	CB	492	243	400	315	-85	0.277	1.8	-170.48	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	2NWall	CB	492	243	400	301	-99	0.277	1.8	-198.56	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B5	2NWall	CB	492	243	400	308	-92	0.277	1.8	-184.52	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
B6	2NWall	CB	492	243	400	362	-38	0.277	1.8	-76.21	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	2EWall	CB	492	243	400	317	-83	0.277	1.8	-166.47	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A2	2EWall	CB	492	243	400	288	-112	0.277	1.8	-224.63	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2EWall	CB	492	243	400	294	-106	0.277	1.8	-212.60	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2EWall	CB	492	243	400	298	-102	0.277	1.8	-204.57	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2EWall	CB	492	243	400	287	-113	0.277	1.8	-226.63	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	2EWall	CB	492	243	400	357	-43	0.277	1.8	-86.24	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2EWall	CB	492	243	400	282	-118	0.277	1.8	-236.66	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	2EWall	CB	492	243	400	303	-97	0.277	1.8	-194.54	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	0.59
B4	2EWall	CB	492	243	400	283	-117	0.277	1.8	-234.66	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B5	2EWall	CB	492	243	400	301	-99	0.277	1.8	-198.56	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B6	2EWall	CB	492	243	400	253	-147	0.277	1.8	-294.83	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2SWall	CB	492	243	400	289	-111	0.277	1.8	-222.62	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2SWall	CB	492	243	400	295	-105	0.277	1.8	-210.59	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2SWall	CB	492	243	400	335	-65	0.277	1.8	-130.37	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2SWall	CB	492	243	400	297	-103	0.277	1.8	-206.58	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	2SWall	CB	492	243	400	311	-89	0.277	1.8	-178.50	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	2SWall	CB	492	243	400	314	-86	0.277	1.8	-172.48	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	0.59
B5	2SWall	CB	492	243	400	293	-107	0.277	1.8	-214.60	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	2WWall	CB	492	243	400	348	-52	0.277	1.8	-104.29	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	2WWall	CB	492	243	400	354	-46	0.277	1.8	-92.26	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	2WWall	CB	492	243	400	362	-38	0.277	1.8	-76.21	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	2WWall	CB	492	243	400	322	-78	0.277	1.8	-156.44	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	2WWall	CB	492	243	400	304	-96	0.277	1.8	-192.54	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	2WWall	CB	492	243	400	323	-77	0.277	1.8	-154.43	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A7	2WWall	CB	492	243	400	315	-85	0.277	1.8	-170.48	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	2WWall	CB	492	243	400	355	-45	0.277	1.8	-90.25	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	-0.47
B2	2WWall	CB	492	243	400	386	-14	0.277	1.8	-28.08	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	2WWall	CB	492	243	400	321	-79	0.277	1.8	-158.44	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	2WWall	CB	492	243	400	328	-72	0.277	1.8	-144.40	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B6	2WWall	CB	492	243	400	411	11	0.277	1.8	22.06	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B7	2WWall	CB	492	243	400	293	-107	0.277	1.8	-214.60	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C5	2NWall	CB	492	243	400	332	-68	0.277	1.8	-136.38	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C4	2EWall	CB	492	243	400	363	-37	0.277	1.8	-74.21	20	N/A	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C3	2SWall	CB	492	243	400	376	-24	0.277	1.8	-48.13	20	N/A	17	N/A	N/A	0.228	1.8	N/A	-0.07	0.59
A2	2Ceiling	L	466	243	384	273	-111	0.277	1.8	-222.62	18	N/A	15	N/A	N/A	0.228	1.8	N/A	-0.07	2.73
B5	2Ceiling	L	466	243	384	342	-42	0.277	1.8	-84.24	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C3	2Ceiling	L	466	243	384	301	-83	0.277	1.8	-166.47	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
D6	2Ceiling	L	466	243	384	318	-66	0.277	1.8	-132.37	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
E4	2Ceiling	L	466	243	384	309	-75	0.277	1.8	-150.42	18	N/A	15	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	UEWall	CB	492	282	400	266	-134	0.281	1.8	-264.93	20	N/A	17	N/A	N/A	0.209	1.8	N/A	-0.07	2.73
A2	UEWall	CB	492	282	400	302	-98	0.281	1.8	-193.75	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	UEWall	CB	492	282	400	262	-138	0.281	1.8	-272.84	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	UEWall	CB	492	282	400	277	-123	0.281	1.8	-243.18	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	USWall	CB	492	282	400	315	-85	0.281	1.8	-168.05	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	USWall	CB	492	282	400	282	-118	0.281	1.8	-233.29	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	USWall	CB	492	282	400	309	-91	0.281	1.8	-179.91	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	USWall	CB	492	282	400	N/A	N/A	0.281	1.8	N/A	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	USWall	CB	492	282	400	263	-137	0.281	1.8	-270.86	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	USWall	CB	492	282	400	293	-107	0.281	1.8	-211.55	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	USWall	CB	492	282	400	322	-78	0.281	1.8	-154.21	20	N/A	17	N/A	N/A	0.209	1.8	N/A	-0.07	0.59
B2	USWall	CB	492	282	400	311	-89	0.281	1.8	-175.96	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	USWall	CB	492	282	400	266	-134	0.281	1.8	-264.93	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	USWall	CB	492	282	400	300	-100	0.281	1.8	-197.71	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	USWall	CB	492	282	400	312	-88	0.281	1.8	-173.98	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	UWWall	CB	492	282	400	251	-149	0.281	1.8	-294.58	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	UWWall	CB	492	282	400	187	-213	0.281	1.8	-421.12	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
B1	UWWall	CB	492	282	400	192	-208	0.281	1.8	-411.23	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	UWWall	CB	492	282	400	245	-155	0.281	1.8	-306.45	20	N/A	17	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	USWall	L	466	287	384	245	-139	0.281	1.8	-274.81	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	-1.53
A3	USWall	L	466	287	384	233	-151	0.281	1.8	-298.54	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	USWall	L	466	287	384	221	-163	0.281	1.8	-322.26	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	USWall	L	466	287	384	287	-97	0.281	1.8	-191.78	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	USWall	L	466	287	384	337	-47	0.281	1.8	-92.92	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	USWall	L	466	287	384	278	-106	0.281	1.8	-209.57	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	USWall	L	466	287	384	237	-147	0.281	1.8	-290.63	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	USWall	L	466	287	384	242	-142	0.281	1.8	-280.74	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	UWWall	L	466	287	384	258	-126	0.281	1.8	-249.11	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	UWWall	L	466	287	384	282	-102	0.281	1.8	-201.66	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	UWWall	L	466	287	384	336	-48	0.281	1.8	-94.90	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	0.59
B2	UWWall	L	466	287	384	264	-120	0.281	1.8	-237.25	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	UNWall	L	466	287	384	218	-166	0.281	1.8	-328.19	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A2	UNWall	L	466	287	384	249	-135	0.281	1.8	-266.90	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	UNWall	L	466	287	384	184	-200	0.281	1.8	-395.41	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	UNWall	L	466	287	384	263	-121	0.281	1.8	-239.22	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	UNWall	L	466	287	384	279	-105	0.281	1.8	-207.59	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	UNWall	L	466	287	384	271	-113	0.281	1.8	-223.41	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	UNWall	L	466	287	384	250	-134	0.281	1.8	-264.93	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	0.59
B3	UNWall	L	466	287	384	302	-82	0.281	1.8	-162.12	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	UNWall	L	466	287	384	284	-100	0.281	1.8	-197.71	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	UNWall	L	466	287	384	312	-72	0.281	1.8	-142.35	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	UCeiling	L	466	282	384	321	-63	0.281	1.8	-124.56	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	-0.47
A2	UCeiling	L	466	282	384	286	-98	0.281	1.8	-193.75	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	UCeiling	L	466	282	384	292	-92	0.281	1.8	-181.89	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	UCeiling	L	466	282	384	301	-83	0.281	1.8	-164.10	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	UCeiling	L	466	282	384	311	-73	0.281	1.8	-144.33	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	UCeiling	L	466	282	384	402	18	0.281	1.8	35.59	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	UCeiling	L	466	282	384	377	-7	0.281	1.8	-13.84	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	UCeiling	L	466	282	384	311	-73	0.281	1.8	-144.33	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	UCeiling	L	466	282	384	401	17	0.281	1.8	33.61	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	UCeiling	L	466	282	384	386	2	0.281	1.8	3.95	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	UHoriz	L	466	282	384	321	-63	0.281	1.8	-124.56	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	0.59
A2	UHoriz	L	466	282	384	286	-98	0.281	1.8	-193.75	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	UHoriz	L	466	282	384	311	-73	0.281	1.8	-144.33	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	UHoriz	L	466	282	384	287	-97	0.281	1.8	-191.78	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	UHoriz	L	466	282	384	305	-79	0.281	1.8	-156.19	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	UHoriz	L	466	282	384	342	-42	0.281	1.8	-83.04	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	UHoriz	L	466	282	384	327	-57	0.281	1.8	-112.69	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	UHoriz	L	466	282	384	369	-15	0.281	1.8	-29.66	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	UHoriz	L	466	282	384	352	-32	0.281	1.8	-63.27	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B5	UHoriz	L	466	282	384	386	2	0.281	1.8	3.95	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A1	NWall	B	807	278	729	505	-224	0.277	1.8	-449.26	25	N/A	22	N/A	N/A	0.228	1.8	N/A	1.74	2.73
A2	NWall	B	807	278	729	557	-172	0.277	1.8	-344.97	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	NWall	B	807	278	729	610	-119	0.277	1.8	-238.67	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	NWall	B	807	278	729	759	30	0.277	1.8	60.17	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	NWall	B	807	278	729	541	-188	0.277	1.8	-377.06	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	NWall	B	807	278	729	520	-209	0.277	1.8	-419.17	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	EWall	B	807	278	729	601	-128	0.277	1.8	-256.72	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	EWall	B	807	278	729	649	-80	0.277	1.8	-160.45	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	EWall	B	807	278	729	502	-227	0.277	1.8	-455.27	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	EWall	B	807	278	729	720	-9	0.277	1.8	-18.05	25	N/A	22	N/A	N/A	0.228	1.8	N/A	-0.07	1.66
A5	EWall	B	807	278	729	611	-118	0.277	1.8	-236.66	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Ambient	Mean	Scan Measurements Gross Counts	Net Counts	Instrument EFF	CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Ambient	Mean	Scan Measurements Gross Counts	Net Counts	Instrument EFF	CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Beta
B1	EWall	B	807	278	729	558	-171	0.277	1.8	-342.96	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B2	EWall	B	807	278	729	519	-210	0.277	1.8	-421.18	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B3	EWall	B	807	278	729	538	-191	0.277	1.8	-383.07	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
C2	EWall	B	807	278	729	616	-113	0.277	1.8	-226.63	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	SWall	B	807	278	729	545	-184	0.277	1.8	-369.03	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A2	SWall	B	807	278	729	508	-221	0.277	1.8	-443.24	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	SWall	B	807	278	729	511	-218	0.277	1.8	-437.22	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	SWall	B	807	278	729	489	-240	0.277	1.8	-481.35	25	N/A	22	N/A	N/A	0.228	1.8	N/A	-0.07	1.66
A5	SWall	B	807	278	729	494	-235	0.277	1.8	-471.32	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	SWall	B	807	278	729	518	-211	0.277	1.8	-423.18	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B1	SWall	B	807	278	729	602	-127	0.277	1.8	-254.71	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B4	SWall	B	807	278	729	467	-262	0.277	1.8	-525.47	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A3	WWall	B	807	278	729	459	-270	0.277	1.8	-541.52	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A4	WWall	B	807	278	729	558	-171	0.277	1.8	-342.96	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A5	WWall	B	807	278	729	463	-266	0.277	1.8	-533.49	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A6	WWall	B	807	278	729	567	-162	0.277	1.8	-324.91	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A7	WWall	B	807	278	729	498	-231	0.277	1.8	-463.30	25	N/A	22	N/A	N/A	0.228	1.8	N/A	-0.07	1.66
B6	WWall	B	807	278	729	710	-19	0.277	1.8	-38.11	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
B7	WWall	B	807	278	729	613	-116	0.277	1.8	-232.65	25	N/A	22	N/A	N/A	0.228	1.8	N/A	N/A	N/A
A1	Roof	L	466	292	384	395	11	0.281	1.8	21.75	18	N/A	15	N/A	N/A	0.209	1.8	N/A	-0.07	15.56
A2	Roof	L	466	292	384	350	-34	0.281	1.8	-67.22	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A3	Roof	L	466	292	384	329	-55	0.281	1.8	-108.74	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A4	Roof	L	466	292	384	364	-20	0.281	1.8	-39.54	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A5	Roof	L	466	292	384	384	0	0.281	1.8	0.00	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A6	Roof	L	466	292	384	446	62	0.281	1.8	122.58	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
A7	Roof	L	466	292	384	360	-24	0.281	1.8	-47.45	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B1	Roof	L	466	292	384	385	1	0.281	1.8	1.98	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B2	Roof	L	466	292	384	393	9	0.281	1.8	17.79	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B3	Roof	L	466	292	384	428	44	0.281	1.8	86.99	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B4	Roof	L	466	292	384	390	6	0.281	1.8	11.86	18	N/A	15	N/A	N/A	0.209	1.8	N/A	5.37	14.49
B5	Roof	L	466	292	384	356	-28	0.281	1.8	-55.36	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B6	Roof	L	466	292	384	368	-16	0.281	1.8	-31.63	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
B7	Roof	L	466	292	384	416	32	0.281	1.8	63.27	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C1	Roof	L	466	292	384	371	-13	0.281	1.8	-25.70	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C2	Roof	L	466	292	384	289	-95	0.281	1.8	-187.82	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C3	Roof	L	466	292	384	276	-108	0.281	1.8	-213.52	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C4	Roof	L	466	292	384	405	21	0.281	1.8	41.52	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C5	Roof	L	466	292	384	425	41	0.281	1.8	81.06	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
C6	Roof	L	466	292	384	337	-47	0.281	1.8	-92.92	18	N/A	15	N/A	N/A	0.209	1.8	N/A	1.74	11.29
C7	Roof	L	466	292	384	361	-23	0.281	1.8	-45.47	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D1	Roof	L	466	292	384	296	-88	0.281	1.8	-173.98	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D2	Roof	L	466	292	384	311	-73	0.281	1.8	-144.33	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D3	Roof	L	466	292	384	347	-37	0.281	1.8	-73.15	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D4	Roof	L	466	292	384	287	-97	0.281	1.8	-191.78	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D5	Roof	L	466	292	384	336	-48	0.281	1.8	-94.90	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D6	Roof	L	466	292	384	310	-74	0.281	1.8	-146.30	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
D7	Roof	L	466	292	384	378	-6	0.281	1.8	-11.86	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
E1	Roof	L	466	292	384	374	-10	0.281	1.8	-19.77	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
E2	Roof	L	466	292	384	360	-24	0.281	1.8	-47.45	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
E3	Roof	L	466	292	384	282	-102	0.281	1.8	-201.66	18	N/A	15	N/A	N/A	0.209	1.8	N/A	7.18	12.36
E4	Roof	L	466	292	384	392	8	0.281	1.8	15.82	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
E5	Roof	L	466	292	384	394	10	0.281	1.8	19.77	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
E6	Roof	L	466	292	384	404	20	0.281	1.8	39.54	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
E7	Roof	L	466	292	384	382	-2	0.281	1.8	-3.95	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
F1	Roof	L	466	292	384	361	-23	0.281	1.8	-45.47	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 3
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
F2	Roof	L	466	292	384	285	-99	0.281	1.8	-195.73	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
F3	Roof	L	466	292	384	307	-77	0.281	1.8	-152.23	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
F4	Roof	L	466	292	384	378	-6	0.281	1.8	-11.86	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
F5	Roof	L	466	292	384	256	-128	0.281	1.8	-253.06	18	N/A	15	N/A	N/A	0.209	1.8	N/A	5.37	11.29
F6	Roof	L	466	292	384	315	-69	0.281	1.8	-136.42	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A
F7	Roof	L	466	292	384	305	-79	0.281	1.8	-156.19	18	N/A	15	N/A	N/A	0.209	1.8	N/A	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 4
JN-6 Wall Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	1NWall	CB	409	311	328	237	-91	0.281	1.8	-179.91	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	-1.53
A2	1NWall	CB	409	311	328	224	-104	0.281	1.8	-205.61	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	2.73
A3	1NWall	CB	409	311	328	237	-91	0.281	1.8	-179.91	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A4	1NWall	CB	409	311	328	221	-107	0.281	1.8	-211.55	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
A5	1NWall	CB	409	311	328	246	-82	0.281	1.8	-162.12	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	2.73
A2	1EWall	CB	409	311	328	242	-86	0.281	1.8	-170.03	7	3	4	0	-4	0.228	1.8	-9.75	1.74	-0.47
A3	1EWall	CB	409	311	328	211	-117	0.281	1.8	-231.32	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	2.73
A4	1EWall	CB	409	311	328	204	-124	0.281	1.8	-245.16	7	3	4	4	0	0.228	1.8	0.00	-0.07	0.59
A1	1WWall	CB	409	311	328	241	-87	0.281	1.8	-172.00	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	4.87
A2	1WWall	CB	409	311	328	248	-80	0.281	1.8	-158.17	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	-1.53
A3	1WWall	CB	409	311	328	231	-97	0.281	1.8	-191.78	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A1	2NWall	CB	409	311	328	244	-84	0.281	1.8	-166.07	7	3	4	1	-3	0.228	1.8	-7.31	1.74	4.87
A2	2NWall	CB	409	311	328	307	-21	0.281	1.8	-41.52	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A3	2NWall	CB	409	311	328	273	-55	0.281	1.8	-108.74	7	3	4	0	-4	0.228	1.8	-9.75	1.74	-0.47
A4	2NWall	CB	409	311	328	244	-84	0.281	1.8	-166.07	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
A5	2NWall	CB	409	311	328	228	-100	0.281	1.8	-197.71	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-2.6
A1	2EWall	CB	409	311	328	248	-80	0.281	1.8	-158.17	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	-1.53
A2	2EWall	CB	409	311	328	241	-87	0.281	1.8	-172.00	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
A3	2EWall	CB	409	311	328	246	-82	0.281	1.8	-162.12	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	1.66
A4	2EWall	CB	409	311	328	224	-104	0.281	1.8	-205.61	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
A5	2EWall	CB	409	311	328	244	-84	0.281	1.8	-166.07	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	1.66
A6	2EWall	CB	409	311	328	240	-88	0.281	1.8	-173.98	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A3	2SWall	CB	409	311	328	217	-111	0.281	1.8	-219.45	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
A4	2SWall	CB	409	311	328	242	-86	0.281	1.8	-170.03	7	3	4	1	-3	0.228	1.8	-7.31	1.74	1.66
A5	2SWall	CB	409	311	328	220	-108	0.281	1.8	-213.52	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	-1.53
A1	2WWall	CB	409	311	328	211	-117	0.281	1.8	-231.32	7	3	4	0	-4	0.228	1.8	-9.75	1.74	3.8
A2	2WWall	CB	409	311	328	225	-103	0.281	1.8	-203.64	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
A3	2WWall	CB	409	311	328	256	-72	0.281	1.8	-142.35	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	2.73
A4	2WWall	CB	409	311	328	251	-77	0.281	1.8	-152.23	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	1.66
A5	2WWall	CB	409	311	328	215	-113	0.281	1.8	-223.41	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	7.01

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Ceiling Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	Ceiling	L	342	244	263	292	29	0.281	1.8	57.33	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A2	Ceiling	L	342	244	263	298	35	0.281	1.8	69.20	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	1.66
A3	Ceiling	L	342	244	263	262	-1	0.281	1.8	-1.98	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
A4	Ceiling	L	342	244	263	254	-9	0.281	1.8	-17.79	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A5	Ceiling	L	342	244	263	289	26	0.281	1.8	51.40	7	2	4	5	1	0.228	1.8	2.44	-0.07	-1.53
A6	Ceiling	L	342	244	263	271	8	0.281	1.8	15.82	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A7	Ceiling	L	342	244	263	320	57	0.281	1.8	112.69	7	2	4	5	1	0.228	1.8	2.44	-0.07	0.59
B1	Ceiling	L	342	244	263	294	31	0.281	1.8	61.29	7	2	4	4	0	0.228	1.8	0.00	-0.07	-1.53
B2	Ceiling	L	342	244	263	257	-6	0.281	1.8	-11.86	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
B4	Ceiling	L	342	244	263	269	6	0.281	1.8	11.86	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
B5	Ceiling	L	342	244	263	256	-7	0.281	1.8	-13.84	7	2	4	4	0	0.228	1.8	0.00	-0.07	3.8
B6	Ceiling	L	342	244	263	239	-24	0.281	1.8	-47.45	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	2.73
B7	Ceiling	L	342	244	263	261	-2	0.281	1.8	-3.95	7	2	4	4	0	0.228	1.8	0.00	1.74	1.66
C1	Ceiling	L	342	244	263	256	-7	0.281	1.8	-13.84	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
C2	Ceiling	L	342	244	263	290	27	0.281	1.8	53.38	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	0.59
C4	Ceiling	L	342	244	263	255	-8	0.281	1.8	-15.82	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	3.8
C5	Ceiling	L	342	244	263	256	-7	0.281	1.8	-13.84	7	2	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
C6	Ceiling	L	342	244	263	218	-45	0.281	1.8	-88.97	7	2	4	3	-1	0.228	1.8	-2.44	-0.07	3.8
C7	Ceiling	L	342	244	263	241	-22	0.281	1.8	-43.50	7	2	4	1	-3	0.228	1.8	-7.31	1.74	-0.47
D1	Ceiling	L	342	244	263	212	-51	0.281	1.8	-100.83	7	2	4	3	-1	0.228	1.8	-2.44	-0.07	-0.47
D2	Ceiling	L	342	244	263	222	-41	0.281	1.8	-81.06	7	2	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
D4	Ceiling	L	342	244	263	220	-43	0.281	1.8	-85.01	7	2	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
D5	Ceiling	L	342	244	263	232	-31	0.281	1.8	-61.29	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	4.87
D6	Ceiling	L	342	244	263	219	-44	0.281	1.8	-86.99	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-1.53
D7	Ceiling	L	342	244	263	331	68	0.281	1.8	134.44	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
E1	Ceiling	L	342	244	263	220	-43	0.281	1.8	-85.01	7	2	4	1	-3	0.228	1.8	-7.31	1.74	8.08
E2	Ceiling	L	342	244	263	205	-58	0.281	1.8	-114.67	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
E3	Ceiling	L	342	244	263	194	-69	0.281	1.8	-136.42	7	2	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
E4	Ceiling	L	342	244	263	216	-47	0.281	1.8	-92.92	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	-2.6
E5	Ceiling	L	342	244	263	229	-34	0.281	1.8	-67.22	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	4.87

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 6
JN-6 Exterior Wall Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	N.Wall	B	659	239	579	431	-148	0.281	1.8	-292.61	8	4	5	9	4	0.228	1.8	9.75	-0.07	0.59
A2	N.Wall	B	659	239	579	505	-74	0.281	1.8	-146.30	8	4	5	8	3	0.228	1.8	7.31	-0.07	2.73
A3	N.Wall	B	659	239	579	490	-89	0.281	1.8	-175.96	8	4	5	6	1	0.228	1.8	2.44	-0.07	4.87
A4	N.Wall	B	659	239	579	505	-74	0.281	1.8	-146.30	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	1.66
A5	N.Wall	B	659	239	579	573	-6	0.281	1.8	-11.86	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	0.59
A6	N.Wall	B	659	239	579	564	-15	0.281	1.8	-29.66	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	-0.47
A1	E.Wall	B	659	239	579	505	-74	0.281	1.8	-146.30	8	4	5	5	0	0.228	1.8	0.00	-0.07	-0.47
A2	E.Wall	B	659	239	579	455	-124	0.281	1.8	-245.16	8	4	5	5	0	0.228	1.8	0.00	-0.07	0.59
A3	E.Wall	B	659	239	579	501	-78	0.281	1.8	-154.21	8	4	5	7	2	0.228	1.8	4.87	-0.07	1.66
A4	E.Wall	B	659	239	579	532	-47	0.281	1.8	-92.92	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	4.87
A5	E.Wall	B	659	239	579	489	-90	0.281	1.8	-177.94	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	-0.47
A6	E.Wall	B	659	239	579	496	-83	0.281	1.8	-164.10	8	4	5	1	-4	0.228	1.8	-9.75	1.74	2.73
B1	E.Wall	B	659	239	579	537	-42	0.281	1.8	-83.04	8	4	5	5	0	0.228	1.8	0.00	-0.07	-1.53
A1	S.Wall	B	659	239	579	462	-117	0.281	1.8	-231.32	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	-1.53
A2	S.Wall	B	659	239	579	446	-133	0.281	1.8	-262.95	8	4	5	8	3	0.228	1.8	7.31	-0.07	-1.53
A3	S.Wall	B	659	239	579	494	-85	0.281	1.8	-168.05	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	1.66
A4	S.Wall	B	659	239	579	465	-114	0.281	1.8	-225.39	8	4	5	1	-4	0.228	1.8	-9.75	-0.07	2.73
A5	S.Wall	B	659	239	579	521	-58	0.281	1.8	-114.67	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	0.59
A6	S.Wall	B	659	239	579	530	-49	0.281	1.8	-96.88	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	-1.53
A2	W.Wall	B	659	239	579	474	-105	0.281	1.8	-207.59	8	4	5	6	1	0.228	1.8	2.44	-0.07	2.73
A3	W.Wall	B	659	239	579	506	-73	0.281	1.8	-144.33	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	-2.6
A4	W.Wall	B	659	239	579	505	-74	0.281	1.8	-146.30	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	-0.47
A5	W.Wall	B	659	239	579	443	-136	0.281	1.8	-268.88	8	4	5	2	-3	0.228	1.8	-7.31	1.74	-1.53
A6	W.Wall	B	659	239	579	439	-140	0.281	1.8	-276.79	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	-0.47
A7	W.Wall	B	659	239	579	514	-65	0.281	1.8	-128.51	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	0.59
B5	W.Wall	B	659	239	579	444	-135	0.281	1.8	-266.90	8	4	5	1	-4	0.228	1.8	-9.75	1.74	2.73
B6	W.Wall	B	659	239	579	441	-138	0.281	1.8	-272.84	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	1.66
B7	W.Wall	B	659	239	579	437	-142	0.281	1.8	-280.74	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	-2.6
B1	S.Wall	B	659	239	579	451	-128	0.281	1.8	-253.06	8	4	5	6	1	0.228	1.8	2.44	-0.07	-1.53
B2	S.Wall	B	659	239	579	407	-172	0.281	1.8	-340.06	8	4	5	1	-4	0.228	1.8	-9.75	-0.07	0.59

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 7
JN-6 Floor Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	Floor	L	342	239	263	285	22	0.281	1.8	43.50	7	4	4	0	-4	0.228	1.8	-9.75	1.74	3.8
A2	Floor	L	342	239	263	266	3	0.281	1.8	5.93	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
A3	Floor	L	342	239	263	293	30	0.281	1.8	59.31	7	4	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A4	Floor	L	342	239	263	276	13	0.281	1.8	25.70	7	4	4	2	-2	0.228	1.8	-4.87	1.74	1.66
A5	Floor	L	342	239	263	277	14	0.281	1.8	27.68	7	4	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A6	Floor	L	342	239	263	268	5	0.281	1.8	9.89	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
A7	Floor	L	342	239	263	270	7	0.281	1.8	13.84	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
B1	Floor	L	342	239	263	293	30	0.281	1.8	59.31	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
B2	Floor	L	342	239	263	267	4	0.281	1.8	7.91	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	1.66
B4	Floor	L	342	239	263	250	-13	0.281	1.8	-25.70	7	4	4	0	-4	0.228	1.8	-9.75	1.74	1.66
B5	Floor	L	342	239	263	263	0	0.281	1.8	0.00	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
B6	Floor	L	342	239	263	295	32	0.281	1.8	63.27	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
B7	Floor	L	342	239	263	236	-27	0.281	1.8	-53.38	7	4	4	1	-3	0.228	1.8	-7.31	1.74	2.73
C1	Floor	L	342	239	263	238	-25	0.281	1.8	-49.43	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	3.8
C2	Floor	L	342	239	263	233	-30	0.281	1.8	-59.31	7	4	4	13	9	0.228	1.8	21.93	1.74	3.8
C4	Floor	L	342	239	263	250	-13	0.281	1.8	-25.70	7	4	4	15	11	0.228	1.8	26.80	-0.07	0.59
C5	Floor	L	342	239	263	274	11	0.281	1.8	21.75	7	4	4	8	4	0.228	1.8	9.75	-0.07	-1.53
C6	Floor	L	342	239	263	256	-7	0.281	1.8	-13.84	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	-1.53
C7	Floor	L	342	239	263	231	-32	0.281	1.8	-63.27	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
D1	Floor	L	342	239	263	232	-31	0.281	1.8	-61.29	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
D2	Floor	L	342	239	263	226	-37	0.281	1.8	-73.15	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	4.87
D4	Floor	L	342	239	263	204	-59	0.281	1.8	-116.65	7	4	4	4	0	0.228	1.8	0.00	-0.07	0.59
D5	Floor	L	342	239	263	232	-31	0.281	1.8	-61.29	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	-0.47
D6	Floor	L	342	239	263	206	-57	0.281	1.8	-112.69	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	2.73
D7	Floor	L	342	239	263	229	-34	0.281	1.8	-67.22	7	4	4	4	0	0.228	1.8	0.00	-0.07	-2.6
E1	Floor	L	342	239	263	216	-47	0.281	1.8	-92.92	7	4	4	2	-2	0.228	1.8	-4.87	-0.07	0.59
E2	Floor	L	342	239	263	260	-3	0.281	1.8	-5.93	7	4	4	4	0	0.228	1.8	0.00	-0.07	0.59
E4	Floor	L	342	239	263	296	33	0.281	1.8	65.24	7	4	4	3	-1	0.228	1.8	-2.44	1.74	2.73
E5	Floor	L	342	239	263	305	42	0.281	1.8	83.04	7	4	4	4	0	0.228	1.8	0.00	-0.07	2.73
E6	Floor	L	342	239	263	287	24	0.281	1.8	47.45	7	4	4	2	-2	0.228	1.8	-4.87	-0.07	1.66

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 8
JN-6 Roof Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	Roof	L	342	311	263	310	47	0.281	1.8	92.92	7	3	4	10	6	0.228	1.8	14.62	1.74	1.66
A2	Roof	L	342	311	263	370	107	0.281	1.8	211.55	7	3	4	5	1	0.228	1.8	2.44	3.55	12.36
A3	Roof	L	342	311	263	367	104	0.281	1.8	205.61	7	3	4	8	4	0.228	1.8	9.75	1.74	0.59
A4	Roof	L	342	311	263	336	73	0.281	1.8	144.33	7	3	4	4	0	0.228	1.8	0.00	3.55	5.94
A5	Roof	L	342	311	263	356	93	0.281	1.8	183.87	7	3	4	4	0	0.228	1.8	0.00	-0.07	3.8
A6	Roof	L	342	311	263	331	68	0.281	1.8	134.44	7	3	4	6	2	0.228	1.8	4.87	1.74	2.73
A7	Roof	L	342	311	263	367	104	0.281	1.8	205.61	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	4.87
B1	Roof	L	342	311	263	341	78	0.281	1.8	154.21	7	3	4	4	0	0.228	1.8	0.00	3.55	8.08
B2	Roof	L	342	311	263	302	39	0.281	1.8	77.11	7	3	4	3	-1	0.228	1.8	-2.44	1.74	5.94
B3	Roof	L	342	311	263	311	48	0.281	1.8	94.90	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	1.66
B4	Roof	L	342	311	263	276	13	0.281	1.8	25.70	7	3	4	1	-3	0.228	1.8	-7.31	1.74	-0.47
B5	Roof	L	342	311	263	282	19	0.281	1.8	37.56	7	3	4	3	-1	0.228	1.8	-2.44	1.74	0.59
B6	Roof	L	342	311	263	308	45	0.281	1.8	88.97	7	3	4	3	-1	0.228	1.8	-2.44	5.37	4.87
B7	Roof	L	342	311	263	267	4	0.281	1.8	7.91	7	3	4	2	-2	0.228	1.8	-4.87	1.74	7.01
C1	Roof	L	342	311	263	306	43	0.281	1.8	85.01	7	3	4	1	-3	0.228	1.8	-7.31	1.74	0.59
C2	Roof	L	342	311	263	275	12	0.281	1.8	23.72	7	3	4	2	-2	0.228	1.8	-4.87	1.74	0.59
C3	Roof	L	342	311	263	291	28	0.281	1.8	55.36	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	4.87
C4	Roof	L	342	311	263	270	7	0.281	1.8	13.84	7	3	4	2	-2	0.228	1.8	-4.87	1.74	3.8
C5	Roof	L	342	311	263	311	48	0.281	1.8	94.90	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
C6	Roof	L	342	311	263	274	11	0.281	1.8	21.75	7	3	4	3	-1	0.228	1.8	-2.44	3.55	4.87
C7	Roof	L	342	311	263	321	58	0.281	1.8	114.67	7	3	4	1	-3	0.228	1.8	-7.31	3.55	10.22
D1	Roof	L	342	311	263	285	22	0.281	1.8	43.50	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
D2	Roof	L	342	311	263	313	50	0.281	1.8	98.85	7	3	4	0	-4	0.228	1.8	-9.75	1.74	-0.47
D3	Roof	L	342	311	263	280	17	0.281	1.8	33.61	7	3	4	1	-3	0.228	1.8	-7.31	5.37	5.94
D4	Roof	L	342	311	263	264	1	0.281	1.8	1.98	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
D5	Roof	L	342	311	263	209	-54	0.281	1.8	-106.76	7	3	4	0	-4	0.228	1.8	-9.75	1.74	0.59
D6	Roof	L	342	311	263	279	16	0.281	1.8	31.63	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	1.66
D7	Roof	L	342	311	263	291	28	0.281	1.8	55.36	7	3	4	3	-1	0.228	1.8	-2.44	1.74	11.29
E1	Roof	L	342	311	263	298	35	0.281	1.8	69.20	7	3	4	2	-2	0.228	1.8	-4.87	1.74	1.66
E2	Roof	L	342	311	263	299	36	0.281	1.8	71.17	7	3	4	0	-4	0.228	1.8	-9.75	1.74	1.66

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

June 7, 2004

Mr. Rob Rothman
Columbus Closure Project Office
U.S. Department of Energy
1425 Plain City-Georgesville Road
State Route 142
West Jefferson, Ohio 43162

DOE CONTRACT NO. DE-AC05-00OR22750
SUBJECT: TYPE A VERIFICATION—COLUMBUS CLOSURE PROJECT CHARACTERIZATION AND FINAL STATUS SURVEY OF BUILDING JN-6, COLUMBUS CLOSURE PROJECT, WEST JEFFERSON, OHIO

Dear Mr. Rothman:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) has reviewed the project documentation and data for Building JN-6 at the Columbus Closure Project (CCP) in West Jefferson, Ohio. Closure Services, LLC (CS) has completed a characterization and final status survey of the facility for the purpose of demonstrating that the U.S. Department of Energy (DOE) unrestricted release criteria have been satisfied. CS intends to demolish the building as part of the site decommissioning and closure activities.

It is the policy of the DOE to perform independent verifications of decontamination and decommissioning activities conducted at DOE-owned facilities. ESSAP has been designated as the organization responsible for this task at the CCP. ESSAP recommended a Type A verification of Building JN-6 based upon the minimal potential for residual radioactivity in the area.

Building JN-6 is a two-story brick building that housed the site's security operations. In preparation for final status survey (FSS) and demolition, all hazardous material and materials that could not be disposed of at a landfill or otherwise interfered with accessing surfaces during the FSS were removed. The CS FSS consisted of surface scans for alpha plus beta radiation, direct and removable alpha and beta surface activity measurements, and exposure rate measurements.

ESSAP reviewed the FSS procedures and data. The results of the review determined that the FSS report does not provide sufficient information to permit ESSAP to independently

radionuclides of concern and the respective guidelines that apply. Comments that were identified are provided as an attachment to this report. ESSAP recommends that the FSS report be revised to include the additional requested information and submitted for further review.

Please contact me at (865) 576-5073 or Eric Abelquist at (865) 576-3740 should you have any questions or we may provide additional information.

Sincerely,

Timothy J. Vitkus
Survey Projects Manager
Environmental Survey and
Site Assessment Program

TJV:dh

Enclosure

cc: E. Abelquist, ORISE/ESSAP
K. Hall, DOE/CCP
File/0928

Distribution approval and concurrence:	Initials	Date
Technical Management Team Member	EA	6/7/04

Comments on the
Columbus Closure Project
Characterization and Final Status Report
For Building JN-6
West Jefferson, Ohio

General Comment

1. The final status survey (FSS) report guidance provided in Chapter 9 of draft NUREG/CR-5849—under which the FSS was designed—states "To the extent practicable, the final status survey report should stand on its own with minimal information incorporated by reference". It is ESSAP's opinion that the report does not satisfy this guidance. Information that has either not been provided or is included by reference, but without additional necessary detail, is discussed in subsequent comments.

Specific Comments

1. Section 1.0, Introduction, 1st paragraph: The document should include additional information regarding the operational history of Building JN-6. In particular, were there any activities as part of the security operations that could potentially have resulted in contamination within the structure? Related to this is that the document does not state whether the building was affected or unaffected.

2. Section 1.0, Introduction, 2nd paragraph: The document does not state what the potential radionuclides of concern are. Please revise the document accordingly. Furthermore, a reference is provided to Table 1 of DD-93-02 for the applicable radiological contamination limits. This reference contains the total allowable surface contamination criteria as found in Table IV of DOE Order 5400.5. The table contains surface contamination limits for four radionuclide groups. The report does not specify which guideline(s) apply for demonstrating compliance. Is the reviewer to assume the most restrictive guidelines apply? Please revise the document to specifically state the applicable guidelines.

3. Section 1.0, Introduction, 4th paragraph: This section describing scan surveys does not indicate that separate alpha scans were performed and the data tables do not provide any alpha scan results. Did contaminants of concern include transuranics (TRU)? If so, alpha scans would be necessary as the minimum detectable concentration (MDC) of gas proportional detectors at the alpha plus beta voltage is not adequate to detect contamination at the TRU guideline levels.

4. Section 1.0, Introduction, 5th paragraph: The plan does not discuss whether the building was a single survey unit or multiple survey units. The reviewer must assume the entire building was a single survey unit. If the building was subdivided into more than one survey unit, then 30 measurements would be required per unaffected survey and/or one measurement per 1 m^2 (or 2 m^2 if the

scan MDC is less than the guideline) for affected survey units when applying draft NUREG/CR-5849 guidance (see also Specific Comment No. 1).

5. Section 3.0, Instrumentation and Section 4.3 Direct Surveys: The document states that a 180 cm^2 gas proportional detector was selected for performing surface activity measurements. ESSAP requests additional information as to how CS ensured compliance with the maximum allowable activity per 100 cm^2 guideline. For example, 15,000 dpm contained within a 100 cm^2 hot spot would be reported as 8,300 dpm/100 cm^2 when using the geometry correction shown in Section 4.3.

6. Section 4.0, Survey Results: ESSAP recommends that this section of the document provide additional information including a summary of the tabulated results and whether surface scans identified any areas requiring further investigation.

7. Data Tables: The review of the scan and static measurement data identified two issues. The first is that the same instrument efficiency is used for both scanning and static measurements. This condition is unlikely as the scanning efficiency is expected to less due to surface to detector spacing as well as other factors. The second issue is that the vast majority of the data (on some pages all of the data) are reported as negative values. This indicates that a non-representative (non-conservative) background count rate value was subtracted from the gross count rate.

Closure Services, LLC
"The Path to Closure"

Timothy J. Vitkus
Survey Projects Manager
Environmental Survey and Site Assessment Program
Oak Ridge Institute for Science and Education
P.O. Box 117
Oak Ridge, TN 37831-0117

July 7, 2004

Subject: Revision of Columbus Closure Project Characterization and Final Status Survey Report for Building JN-6

Re: Letter to R. Rothman from T. Vitkus, June 7, 2004

Dear Mr. Vitkus,

ECC&E2 Closure Services, LLC (Closure Services) has reviewed the comments submitted in your correspondence to Mr. Rob Rothman, U.S. Department of Energy (DOE), on June 7, 2004. Closure Services appreciates the concise and detailed review of the Draft, Columbus Closure Project Characterization and Final Status Survey Report for the Building JN-6, as submitted to the Oak Ridge Institute for Science and Education (ORISE), through the DOE.

In responding the comments, we have completely revised the report to reflect the guidance provided in the "Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment" NUREG/CR-5849, ORAU-92/C57, and your comments. The revised report is enclosed with this correspondence.

Attachment A details our responses to the comment submitted in your June 7 correspondence.

Should you require additional information or clarification, please contact my office at (614) 879-6841.

Sincerely,

Scott Zoller
Site Radiation Safety Officer

Enclosure:
As Stated

Attachment:
Attachment A: Responses to Comments, Columbus Closure Project Characterization Final Status Survey Report for Building JN-6, West Jefferson, Ohio

State Route 142 East
1425 Plain City-Georgesville Rd
West Jefferson, OH 43162
(614) 879-6941 • Fax: (614) 879-7571

Attachment A
Responses to Comment
Columbus Closure Project Characterization Final Status Survey Report for Building JN-6
West Jefferson, Ohio

General Comment

1. The Final status survey (FSS) report guidance provided in Chapter 9 of draft NUREG/CR-5849 – under which the FSS was designed – states "To the extent practicable, the final status survey report should stand on its own with minimal information incorporated by reference". It is ESSAP's opinion that the report does not satisfy this guidance. Information that has either not been provided or is included by reference, but without necessary detail, is discussed in subsequent comments.

Response

Closure Services utilized previous characterization and final status survey reports submitted by Battelle to the U.S. Nuclear Regulatory Commission (NRC) as a template for the Building JN-6 report. Previous reports relied heavily on references to implementing plans, procedures, and technical documents. However, the model fails to provide sufficient detail to enable an isolated and independent review of the report. As such, Closure Services has revised the report to reflect the template presented in Chapter 9 of NUREG-5849. Serious efforts have been made to allow the report to be self-sustaining, while minimizing information by incorporation by reference.

Specific Comments

1. Section 1.0, Introduction, 1st paragraph: The document should include additional information regarding the operational history of Building JN-6. In particular, were there any activities as part of the security operations that could potentially have resulted in contamination within the structure? Related to this is that the document does not state whether the building was affected or unaffected.

   Response: The report has been revised to present additional information regarding the operational history of Building JN-6. Specifically, information has been added concerning past operational and functional activities that occurred within the building. It is unlikely that previous activities within the building resulted in radiological contamination. A clear statement has been added to the report indicating that Building JN-6 is considered a non-baseline, unaffected building.

2. Section 1.0, Introduction, 2nd paragraph: The document does not state what the potential radionuclides of concern are. Please review the document accordingly. Furthermore, a reference is provided to Table 1 of DD-93-02 fir the applicable radiological contamination limits. This reference contains the total allowable surface contamination criteria as found in

Table IV of DOE Order 5400.5. The table contains surface contamination limits for four radionuclide groups. The report does not specify which guideline(s) apply for demonstrating compliance. Is the reviewer to assume the most restrictive guidelines apply? Please revise the document to specifically state the applicable guidelines.

Response: Building JN-6 has been designated as a non-baseline, unaffected facility. Therefore, no radionuclides of concern have been identified for Building JN-6. Previously, Building JN-6 was used as a control point for the Columbus Closure Project (CCP) for personnel exiting the site. Discussions with personnel regarding the portal alarm responses revealed that alarms occurred very infrequently and were possibly related to hot particle contamination from Building JN-1. Hot particles at the CCP consist mostly of cesium-137 and cobalt-60. Strontium-90 is also present at a relatively large (22 percent) abundance in the JN-1 standard mixture of radionuclides. Since specific radioisotopic data was not collected for JN-6, the more conservative Strontium-90 limits were applied. The text has been revised to reflect this designation of release limits.

3. Section 1.0, Introduction, 4th paragraph: This section describing scan surveys does not indicate that separate alpha scans were performed and the data tables do not provide any alpha scan results. Did contaminants of concern include transuranics (TRU)? If so, alpha scans would be necessary as the minimum detectable concentration (MDC) of gas proportional detectors at the alpha plus beta voltage is not adequate to detect contamination at the TRU guideline levels.

   Response: As discussed in the previous response, Building JN-1 exhibits a standard radioisotopic mixture of radionuclides. Alpha-emitting transuranic radionuclides are present in the mixture, representing an extremely small percentage of the mixture (less than three percent). Applying this ratio of beta/gamma emitters to TRU, surface contamination limits for alpha + beta would be exceeded well before the alpha contamination limits. This analysis is specific to Building JN-6. As such, alpha scans were not performed for the characterization and final status survey for the building. Smears for removable alpha contamination and alpha static measurements were performed as part of the characterization survey.

4. Section 1.0, Introduction, 5th paragraph: The plan does not discuss whether the building was a single survey unit or multiple survey units. The reviewer must assume the entire building was a single survey unit. If the building was subdivided into more than one survey unit, then 30 measurements would be required per unaffected survey and/or one measurement per 1 m2 (or 2 m2 if the scan MDC is less than the guideline) for affected survey units when applying draft NUREG/CR-5849 guidance (see also Specific Comment No. 1).

   Response: Building JN-6 was considered a non-baseline, unaffected facility and designated as a single survey unit. Five separate population surveys were conducted in compliance with implementing procedure Section 5.3.1 of SC-OP-025.

Specifically, a large population statistical survey consisting of static counts was performed for each interior building surface (i.e., walls, floors, etc.). Measurements were taken at a minimum of 30 locations within each large population survey area. These locations were interior walls, ceiling, floor, external walls, and roof. Additional survey measurements were not performed as the scanning-MDC was sufficient for detecting the beta surface contamination limit.

5. Section 3.0, Instrumentation and Section 4.3, Direct Surveys: The document states that a 180 cm^2 gas proportional detector was selected for performing surface activity measurements. ESSAP requests additional information as to how CS ensured compliance with the maximum allowable activity per 100 cm^2 guideline. For example, 15,000 dpm contained within a 100 cm2 hot spot would be reported as 8,300 dpm/100 cm^2 when using the geometry correction shown in Section 4.3.

   Response: The text has been revised to state: Count rates for both wide area (greater than the probe area of 180 cm^2) and point (less than the probe area of 180 cm^2) sources were normalized to 100 cm^2 through this equation. Utilizing the equation confirms that all wide-area sources met the 1,000 dpm/100 cm^2 release criteria. Point sources, if identified, were also subject to the normalizing equation. Therefore, activities for point sources was limited to 1800 dpm/100 cm^2, which is well below the 3,000 dpm/100 cm^2 release criteria for "hot spots."

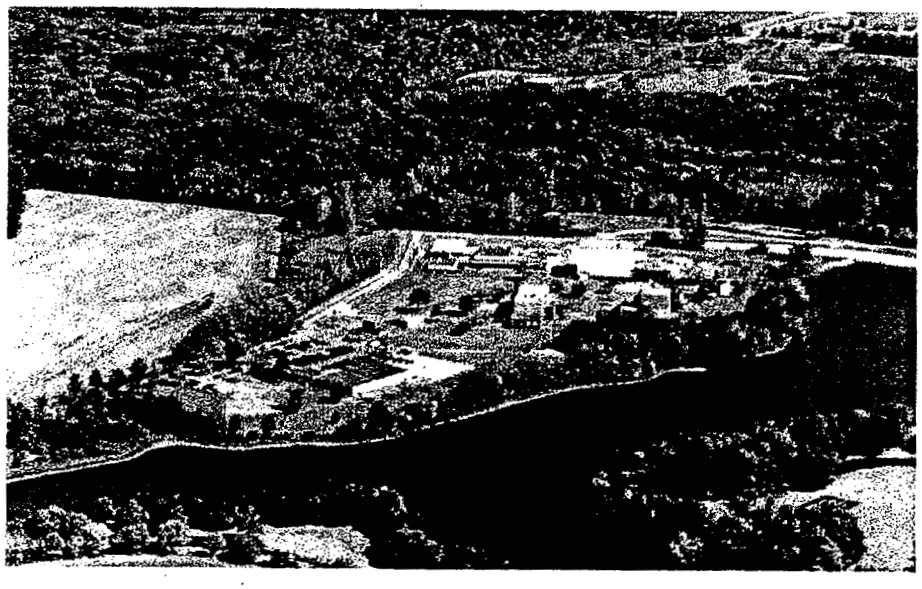
6. Section 4.0, Survey Results: ESSAP recommends that this section of the document provide additional information including a summary of the tabulated results and whether surface scans identified any areas requiring further investigation.

   Response: Summary Tables have been added to Revised Section 6.3. No surface scans or static measurements identified areas requiring further investigation.

7. Data Tables: The review of the scan and static measurement data identified two issues. The first is that the same instrument efficiency is used for both scanning and static measurements. This condition is unlikely as the scanning efficiency is expected to be less due to surface to detector spacing as well as other factors. The second issue is that the vast majority of the data (on some pages all the data) are reported as negative values. This indicates that a non-representative (non-conservative) background count rate value was subtracted from the gross count rate.

   Response: As to the first concern, the data tables present the instrument efficiency as determined during the daily performance test. Characterization Teams used the same instrument for the scanning and static measurements for alpha + beta surveys. As such, the instrument efficiency did not change. However, the scanning-MDC may change due to parameters such as stated in the comment. As such, the calculation of the scan-MDC has been incorporated into Attachment A of the report. As to the second concern, Revised Section 4.2 now incorporates a conservative estimate of background conditions. Background measurements were performed in Building JN-

2. Building JN-2 is located within 200 feet of Building JN-1. The current inventory of radioactive material within Building JN-1 contributes to slightly elevated exposure rates within Building JN-2. For this reason, the building material type background alpha + beta values for Building JN-2 have been adjusted by subtracting the corresponding mean ambient readings. The ambient background is obtained by turning the probe face up (not on any surface material) and taking a measurement in the middle of a room. Subtracting the corresponding mean ambient reading from each mean background enables a very conservative background to be applied for the characterization and final status surveys for Building JN-6. Table 11 presents the resultant corrected values of the various material types examined. Background measurements for alpha were not adjusted as ambient radiation levels did not influence alpha readings.



COLUMBUS CLOSURE PROJECT CHARACTERIZATION AND FINAL STATUS SURVEY REPORT FOR BUILDING JN-6

Revision 1
July 2004

Prepared by

ECC & E2 Closure Services
1425 State Route 142 East
West Jefferson, OH 43162

Contract Number: DE-AC24-04OH20171

Characterization and Final Status Report for Building JN-6

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1.0 Introduction

This report contains the characterization and final status surveys of Building JN-6 located at the Columbus Closure Project (CCP), 1425 Plain City/Georgesville Road State Route 142 East, West Jefferson, OH 43162. The characterization and final status surveys were conducted in May, 2004 and encompass only the above ground structure. The subsurface soils will be released at a later date. A site map of the CCP is presented in Figure 1.

The intent of this final status survey report is to provide a complete and unambiguous record of the radiological status of Building JN-6. Sufficient information and data is provided to enable an independent re-creation and evaluation at some future date of both the survey activities and the reported results as related to Building JN-6. Much of the information in this report is also available in various technical basis documents, final status survey plans and procedures, and the decommissioning plan, and various reporting and quality assurance and control procedures. (ORAU, 1992)

To the extent practicable, this final status survey report is presented with minimal information incorporated by reference. This final status survey report has been generated following the comprehensive, annotated outline presented in Chapter 9 of NUREG-5849. (ORAU, 1992)

1.1 Background

On April 16, 1943, BMI, acting through what is now its Battelle Columbus Operations (BCO), entered into Contract No. W-7405-ENG-92 with the Manhattan Engineering District to perform atomic energy research and development (R&D) activities. BCO performed nuclear materials research and development at privately-owned facilities for the Manhattan Engineering District and its successor agencies – the Atomic Energy Commission (AEC), the Energy Research and Development Agency (ERDA), and the Department of Energy (DOE). Research and development continued until 1988. (Battelle, 2003)

The BCO facilities at the King Avenue Site, Columbus, Ohio, and the West Jefferson North and South Sites, West Jefferson, Ohio, became partially radiologically contaminated as a result of the R&D activities. Decontamination of the King Avenue Sites has been completed and activities continue at the WJN site. The DOE, as the successor to the AEC and the Government's earlier work, is the agreed party with predominant liability and responsibility for decontamination and decommissioning (D&D) of the BCO facilities. (Battelle, 2003) The Assistant Secretary for Nuclear Energy of the DOE accepted the decontamination and decommissioning (D&D) of the WJN into the DOE's Surplus Facilities Management Program as a major project. (DOE, 1986) The DOE is the agency funding and managing the cleanup of the WJN. (Battelle, 2003) However, the site is not a DOE-owned facility.

BMI holds U.S. Nuclear Regulatory Commission (NRC) license number SNM-7. BMI has continually operated and conducted D&D activities in full compliance with this NRC license. The Decommissioning Plan for the WJN site does not serve to form a termination of the license and does establish the criteria for performing D&D activities with the end goal of reaching unrestricted use conditions at the site. (Battelle, 2003)

The DOE has contracted ECC&E2 Closure Services, LLC (Closure Services) to safely remove DOE radioactive materials and contamination from WJN site. Removal of radioactive material will be to levels allowing future use of the site without radiological restrictions as described in the Decommissioning Plan. Closure Services has conducted characterization and final status surveys of Building JN-6 to demonstrate that the building is available for unrestricted release.

2.0 Site Description

Created in 1984, the Battelle Columbus Decommissioning Project (BCLDP) is a remediation project that includes nine buildings at the King Avenue site and six at the West Jefferson site. The CCP is the successor of the BCLDP. The WJN site has five permanent structures (nuclear research facilities JN-1, JN-2, JN-3, the security operations Building JN-6, and the Well House). Several outfalls, filter beds, and wells are also located at the site.

2.1 Facility Description

JN-6 is a brick building that housed Battelle's West Jefferson security operations. JN-6 also served as the access control point for the site and the North Site BMI Emergency Command Center. The building is a two story structure and is approximately 20' by 25'. All utilities with the exception of sanitary sewer were routed through building JN-3. JN-6 is the first input to the sanitary sewer system for the North Site. Available historical information indicates that activities, processes, and operations performed within and around the building did not utilize radioactive materials.

Building JN-6 is designated as an unaffected area. NUREG-5849 defines an unaffected area as:

> All areas not classified as affected. These areas are not expected to contain residual radioactivity, based on a knowledge of site history and previous information.

(ORAU, 1992)

Building JN-6 is also considered a non-baseline area. (Battelle, 2003)

3.0 Decommissioning Activities

3.1 Objectives

Building JN-6 is considered to be an unaffected, non-baseline area. As such, the building was not expected to contain residual radioactive contamination. The objective of the final status survey preformed in Building JN-6 was to statistically demonstrate that the building is free from residual radioactive contamination and is suitable for release. Table 1 presents the surface release criteria as presented in DD-93-02, Rev. 0, "Surface Release Criteria Technical Basis Document," (Battelle, 19993A). Table 2 presents the volumetric release criteria as presented in DD-93-03, Rev. 0, "Volumetric Release Criteria Technical Basis Document for Battelle Columbus Laboratory Decommissioning Project." (Battelle, 1993B)

Closure Services Waste Management (WM) personnel surveyed the JN-6 Building for hazardous and items not conforming to the sanitary landfill disposal requirements. These items included items that may have contained hazardous constituents regulated by the Resource Conservation and Recovery Act or the Toxic Substance Control Act. Closure Services Field Crews then removed the items identified by the WM personnel. These items included fluorescent light bulbs, fluorescent light ballasts, and 12 asbestos containing floor tiles.

Closure Services Characterization Teams performed the final status survey after the hazardous materials were removed from the building. No systems or components were removed due to radiological contamination.

4.0 Final Status Survey Procedures

The Closure Services Characterization Team conducted the final status survey of Building JN-6 according to DD-97-02, Rev. 0. (Battelle, 2000) The final status survey was performed under Work Instruction 2600.

Specifically, the planning and implementation of the final status survey adhered to the requirements Section 5.4 of DD-97-02, Rev. 0. (Battelle, 2000)

4.1 Sampling Parameters

Non-baseline areas do not require an established grid system. (Battelle, 2000) However, the Characterization Team opted for a grid system as an effective tool to organize documentation of characterization survey data. The Building JN-6 characterization grid system comprised of a single survey unit, segregated into one square meter (1m x 1m) grids. Figures 3 to 8 present the Building JN-6 grids and the alpha numeric identifier for each.

Characterization scans were then performed in each grid with Sections 5.4.3 of DD-97-02, Rev. 0. (Battelle, 2000) Section 5.4.3, allows for 10 percent of the floor and lower areas of the walls to be scanned. The Characterization Team scanned 100 percent of the floor and walls up to two meters due to insufficient historical survey data for the facility. Ten percent of the surface area of the walls above two meters, the ceiling, and the roof were scanned. The scanning survey included alpha and beta scans for all accessible surfaces. Static one-minute readings were performed in a grid when scan survey readings indicate net activity above the Decision Level Value (DLV).

A large population statistical survey was conducted for the floors and the wall surfaces within Building JN-6 as required by Section 5.4.5, "Population Survey", of DD-97-02, Rev. 0. (Battelle, 2000) The statistical survey consisted of static alpha + beta integrated measurement, a of the thirty grids from the floor, the walls, the ceiling, and the exterior of the building.

Samples were taken from accessible sink traps, drains, and sumps. As part of the release process, sample results from sink traps, drains and sumps were compared to the release criterion listed in Table 2.

4.2 Background/Baseline Levels Identified

The Characterization Team performed a background survey in support of the characterization and final status survey for Building JN-6. The background survey was conducted within Building JN-2 for alpha + beta and alpha integrated measurements for each building material type. Building material types included:

- Concrete floor,
- Concrete block wall,
- Concrete forms,
- LONAM (steel, window frames, building components), and
- Brick

Background surveys were performed in the same manner and with the same instrumentation used during the characterization and final status survey of Building JN-6. A decision level value (DLV) was calculated to permit the field identification of surfaces requiring additional radiological measurements. Decision level values were calculated using the following equation: (Battelle, 2000)

$$DLV = \bar{x}_{bkg} + MDA$$

where:

$\bar{x}_{bkg}$ = mean background value (cpm)
MDA = minimum detectable activity (cpm).

MDA values were calculated using the following equation:

$$MDA = 3 + 4.65(\sigma_{bkg})$$

where:

Φ_{bkg} = standard deviation of background value.

Background measurements were performed in Building JN-2. Building JN-2 is located within 200 feet of Building JN-1. The current inventory of radioactive material within Building JN-1 contributes to slightly elevated exposure rates within Building JN-2. For this reason, the building material type background alpha + beta values for Building JN-2 have been adjusted by subtracting the corresponding mean ambient readings. The ambient background is obtained by turning the probe face up (not on any surface material) and taking a measurement in the middle of a room. Subtracting the corresponding mean ambient reading from each mean background enables a very conservative background to be applied for the characterization and final status surveys for Building JN-6. Table 11 presents the resultant corrected values of the various material types examined. Background measurements for alpha were not adjusted as ambient radiation levels did not influence alpha readings.

Background measurements established for Building JN-6 are exclusive to this characterization and final status survey report. For future efforts for the remaining non-baseline and baseline facilities, a separate background will be established. Specifically, the separate background will be developed using survey data collected following the unrestricted release of Building JN-6.

4.3 Major Contaminants Identified

Building JN-6 has been determined to be a non-baseline, unaffected facility. Therefore, no potential radionuclides were identified for the surveys and sampling of JN-6. (Battelle, 2003)

4.3.1 Guidelines Established

Building JN-6 served as the access control point for the site. Therefore, the most likely contamination present within the building would be from Building JN-1. The standard mixture of radionuclides for Building JN-1 primarily consists of Cesium-137 and Cobalt-60, with Strontium-90 representing 22 percent. As such, the more restrictive surface contamination limits associated with Sr-90 were applied to the characterization and final status survey for Building JN-6.

Table 1 presents the surface contamination guidelines applied for Building JN-6. These criteria are provided by DOE Order 5400.5 "Radiation Protection of the Public and Environment," which reference Regulatory Guide 1.86. DOE Order 5400.5 does not define the release levels for nuclides such as transuranics, Ra-226 and Th-230, therefore the CCP adopted the guidance of Regulatory Guide 1.86.

Table 2 presents the guidelines for residual radioactivity concentrations for soil and solid volumes as applied to Building JN-6. Criteria for residual radioactivity concentrations in soil are defined in a number of references. DOE Order 5400.5, Section IV.a.2 provides generic guidelines for residual concentrations of Ra-226, Ra-228, Th-230, and Th-232. NRC Guidance has been received by the CCP which contains soil radioactivity concentration guidelines for Co-60, Sr-90, Cs-137, Ra-226, and Ra-228. NRC guidance for soil radioactivity concentration guidelines for natural, enriched and depleted uranium is also utilized. Table 2 is a compilation of the soil residual radioactivity concentration guidelines to be utilized by the CCP generated primarily from the various reference documents mentioned in the above sentences and from soil guidelines generated from computer pathway analyses.

5.0 Equipment and Procedures

5.1 Equipment

Direct reading gas proportional survey instruments sensitive to alpha and beta radiation are used to monitor facility surfaces for residual radioactive materials. Ludlum Model 43-20 gas proportional detectors (180 square centimeters (cm^2) detection areas) with Eberline ESP-2 meters was used to scan all building surfaces. The 180 cm^2 detector was used for all static measurements for the determination of residual radioactivity levels. P-10 gas was supplied via a continuous feed to the detectors. Thin, flat plate thorium-230 and technicium-99 sources traceable to the National Institute of Standards and Technology (NIST) per requirements of ANSI-N323a, "Radiation Protection Instrumentation Test and Calibration" were used to calibrate the gas proportional instruments for alpha and beta detection, respectively. (ANSI, 1997)

Other instrumentation used in the support of the final status survey include:

- A Ludlum Model 19 Exposure Rate Meter to perform gamma radiation measurements
- A VMS based Canberra Procount data acquisition system in conjunction with high purity germanium detectors for gamma spectroscopy
- A Tennelec Model LB5100 Simultaneous Alpha and Beta Gas Proportional Counter to count smear samples

5.2 Minimum Detectable Activities

Minimum detectable activities (MDAs) are determined utilizing the data collected for each surface material. The MDA for large, wide area sources was calculated assuming the radioactive source remained under the detector approximately one minute, allowing the MDA for wide-area source scan surveys to approach the MDA reported for a static survey. The MDA for a wide-area source was calculated at 275 disintegrations per minute per 100 square centimeters (dpm/100 cm^2). The MDA for scans involving point sources were calculated by evaluating the time a point source remained under the detection area, given a worst-case brick background. An MDA of 2790 dpm/100 cm^2 was calculated for a point source configuration during a scan survey. Attachment A details the method for calculating the MDA.

5.3 Procedures

The Characterization Team was formally trained and qualified to applicable procedures prior to the initiation of the characterization and final status surveys. Documentation of training is maintained by CCP Project Records.

The following plans and procedures were utilized for the surveys:

DD-93-19, Rev. 4	Decommissioning Plan, Battelle Memorial Institute Columbus Operations
DD-97-02, Rev. 0	Radiological Characterization and Final Status Plan for BCLDP West Jefferson Site
SC-OP-004, Rev. 0	Radioactive Contamination Monitoring Requirements for Facility Surface Characterization
SC-OP-007, Rev. 0	Baseline Reference Values for Facility Radiological Characterization Surveys
SC-OP-010, Rev. 0	Establishing a Surface Reference Grid for Walls, Floors, and Ceilings for a Detailed Characterization Survey
SC-OP-025, Rev. 0	Facility Non-Baseline Final Status Survey
SC-SP-004.2, Rev. 3	Manual and Mechanical Collection of Surface and Subsurface Soil Samples in Support of Site Characterization
SC-SP-006, Rev. 3	Sampling of Sediment and Sludge for Chemical and Radiological Characterization
SC-SP-015, Rev. 1	Sampling of Special Materials for Characterization

6.0 Survey Findings

6.1 Exposure Rate Surveys

The calculated mean background exposure rate and the 95 percent confidence intervals used for the CCP grounds are 8 ± 2 μR/hr. The exposure rate readings in Table 3 were individually compared to the mean background value of 8 ± 1 μR/hr in order to show compliance with the 5 μR /hr above background release criterion (exposure rate surveys must be less than 13 μR/hr to be compliant). All exposure rates were less than the 5 μR /hr release criterion and are presented as Table 3.

6.2 Drain and Sump Sampling

Liquid samples were collected from the drains and sump located in Building JN-6. No radionuclides were detected above the associated MDA in the analyses. Radioanalytical analyses are presented in Table 4.

6.3 Scanning and Fixed Measurements

Final status surveys for total (fixed and removable) were less than the release criteria defined in Table 1. Tables 5 through 10 present scanning and static survey results from the Building JN-6 surveys. Numerical values in the tables represent residual activities and were computed as follows:

$$\frac{dpm}{100cm^2} = \frac{C_g - C_b}{(T)(Eff)(\frac{180}{100})}$$

Where:

C_g = Gross counts (counts/180 cm^2)
C_b = Mean value of background counts (counts/180 cm^2)
T = count time (min) [one minute count time is standard]
Eff = average instrument efficiency

Count rates for both wide area (greater than the probe area of 180 cm^2) and point (less than the probe area of 180 cm^2) sources were normalized to 100 cm^2 through this equation. Utilizing the equation confirms that all wide-area sources met the 1,000 dpm/100 cm^2 release criteria. Point sources, if identified, were also subject to the normalizing equation. Therefore, activities for point sources was limited to 1800 dpm/100 cm^2, which is well below the 3,000 dpm/100 cm^2 release criteria for "hot spots."

Areas where measurements exceed the decision level value (DLV), precise identification of the area and additional data collection is required. Further data collection includes: (a) a static alpha-plus-beta measurement, (b) a static alpha-only measurement, and (c) a smear sample. In these areas, it is Closure Services current policy to decontaminate the area to below 1000 dpm/100 cm^2, or in the case of ground floor contamination, protection and saw cutting the area for future removal as low level waste after the building demolition. If decontamination is not feasible in the area, additional information such as the exact area of contamination and contamination levels using a 100 cm^2 probe are obtained.

The following summarizes the alpha + beta scanning and integrated measurement surveys obtained for Building JN-6. a total of 390 Survey grids were scanned, static measurements and smears were collected in 150 survey grids. The results of these surveys are summarized below.

SURVEY LOCATION	TOTAL SURFACE, BETA RESULTS IN DPM			TOTAL SURFACE, ALPHA RESULTS IN DPM		
	AVG	MAX.	MIN.	AVG	MAX.	MIN.
JN-6 Scanning Surveys	417.5	870.4	4.0	n/a	n/a	n/a
JN-6 Wall Population Survey	395.9	533.8	330.2	-6.8	0.0	-9.7
JN-6 Floor Population Survey	317.5	472.5	201.7	-5.1	2.4	-9.7
JN-6 Exterior Wall Population Survey	56.1	229.3	-98.9	-2.7	9.7	-9.7
JN-6 Floor Population Survey	326.5	421.1	221.4	-3.6	26.8	-9.7
JN-6 Roof Population Survey	417.2	549.6	231.3	-3.6	14.6	-9.7

SURVEY LOCATION	REMOVABLE, BETA RESULTS IN DPM			REMOVABLE, ALPHA RESULTS IN DPM		
	AVG	MAX.	MIN.	AVG	MAX.	MIN.
JN-6 Scanning Surveys	1.9	15.6	-2.6	0.7	7.2	-0.1
JN-6 Wall Population Survey	1.1	7.0	-2.6	0.2	1.7	-0.1
JN-6 Floor Population Survey	1.0	8.1	-2.6	0.1	1.7	-0.1
JN-6 Exterior Wall Population Survey	0.6	4.9	-2.6	0.1	1.7	-0.1
JN-6 Floor Population Survey	1.2	4.9	-2.6	0.3	1.7	-0.1
JN-6 Roof Population Survey	3.6	12.4	-0.5	1.8	5.4	-0.1

The highest values were data obtained from brick surveys. Brick has one of the highest alpha and beta/gamma background count rates of any of the building materials at the CCP.

7.0 Conclusions

The characterization and final status survey results demonstrate that the radiological endpoint criteria objectives of the NRC-approved Decommissioning Plan have been met for the areas addressed by this effort. (Battelle, 2003) The scanning and the integrated measurements for alpha + beta and alpha and the smear survey results obtained from Building JN-6 are reported as concentrations less than those listed in Table 1. Reported analytical results for media samples obtained from Building JN-2 are below the residual radioactivity concentrations for soil and solid volumes as presented in Table 2.

8.0 References

American National Standards Institute (ANSI), 1997. ANSI-N323a, "Radiation Protection Instrumentation Test and Calibration."

Battelle, 2003. "Decommissioning Plan for the Battelle Memorial Institute Columbus Operations," DD-93-19

Battelle ,2000. "Radiological Characterization and Final Status Survey Plan for Battelle Columbus Laboratory Decommissioning Project West Jefferson Site," DD-97-02

Battelle, 1993A. "Surface Release Criteria Technical Basis Document," DD-93-02.

Battelle, 1993B. "Volumetric Release Criteria Technical Basis Document for Battelle Columbus Laboratories Decommissioning Project," DD-93-03.

U.S. Department of Energy (DOE), 1986. May 29, 1986 memorandum, Voight to Vaughan, approved by Vaughan, June 10, 1986.

Oak Ridge Associated Universities (ORAU), 1992. "Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment" NUREG/CR-5849, ORAU-92/C57, prepared for the Nuclear Regulatory Commission by the Environmental Survey and Assessment Program, Energy/Environmental Systems Division, ORAU, 1992.

FIGURES

FIGURE 1, SITE MAP

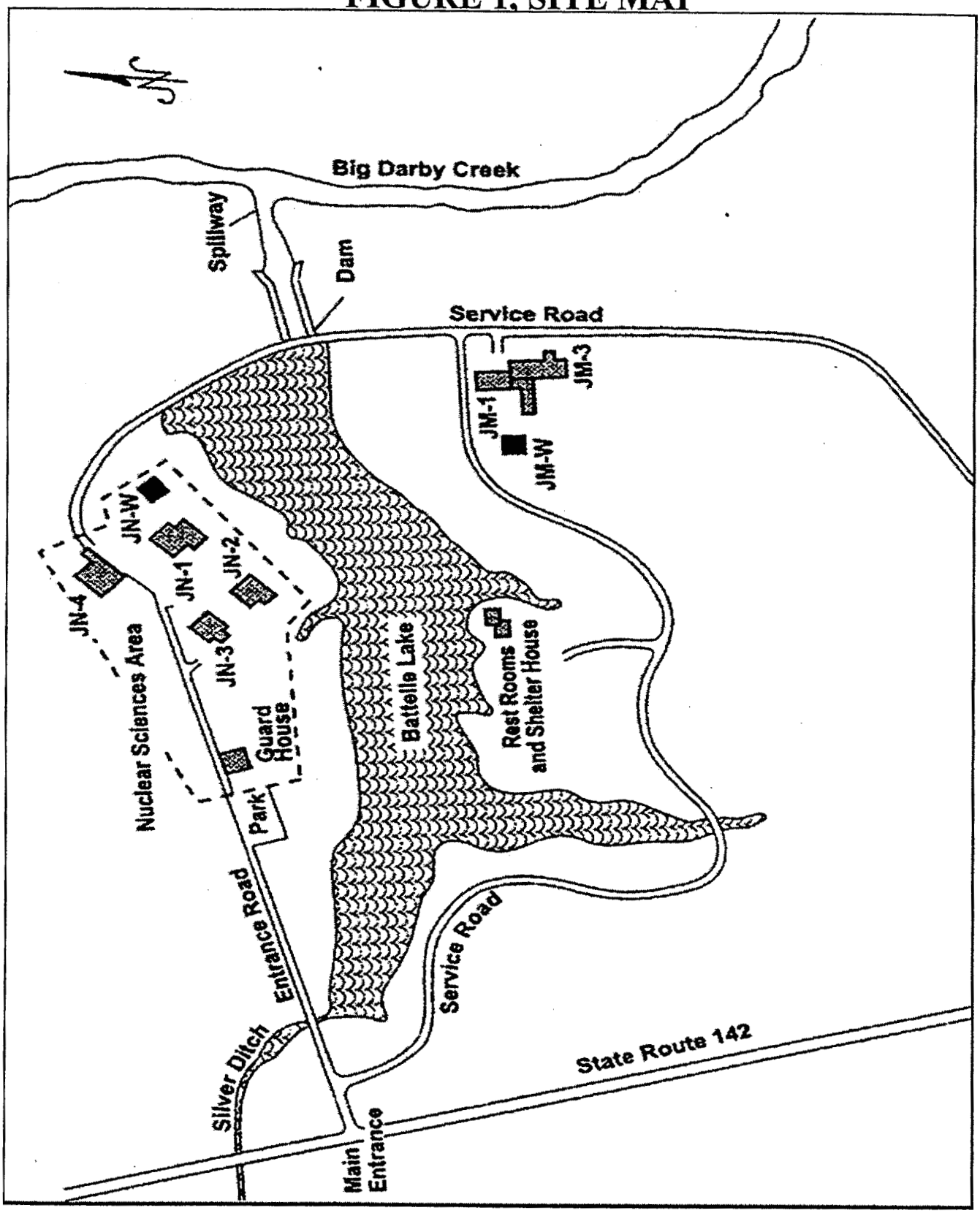


Figure 2, JN6 Grid
Guard Station, First Floor

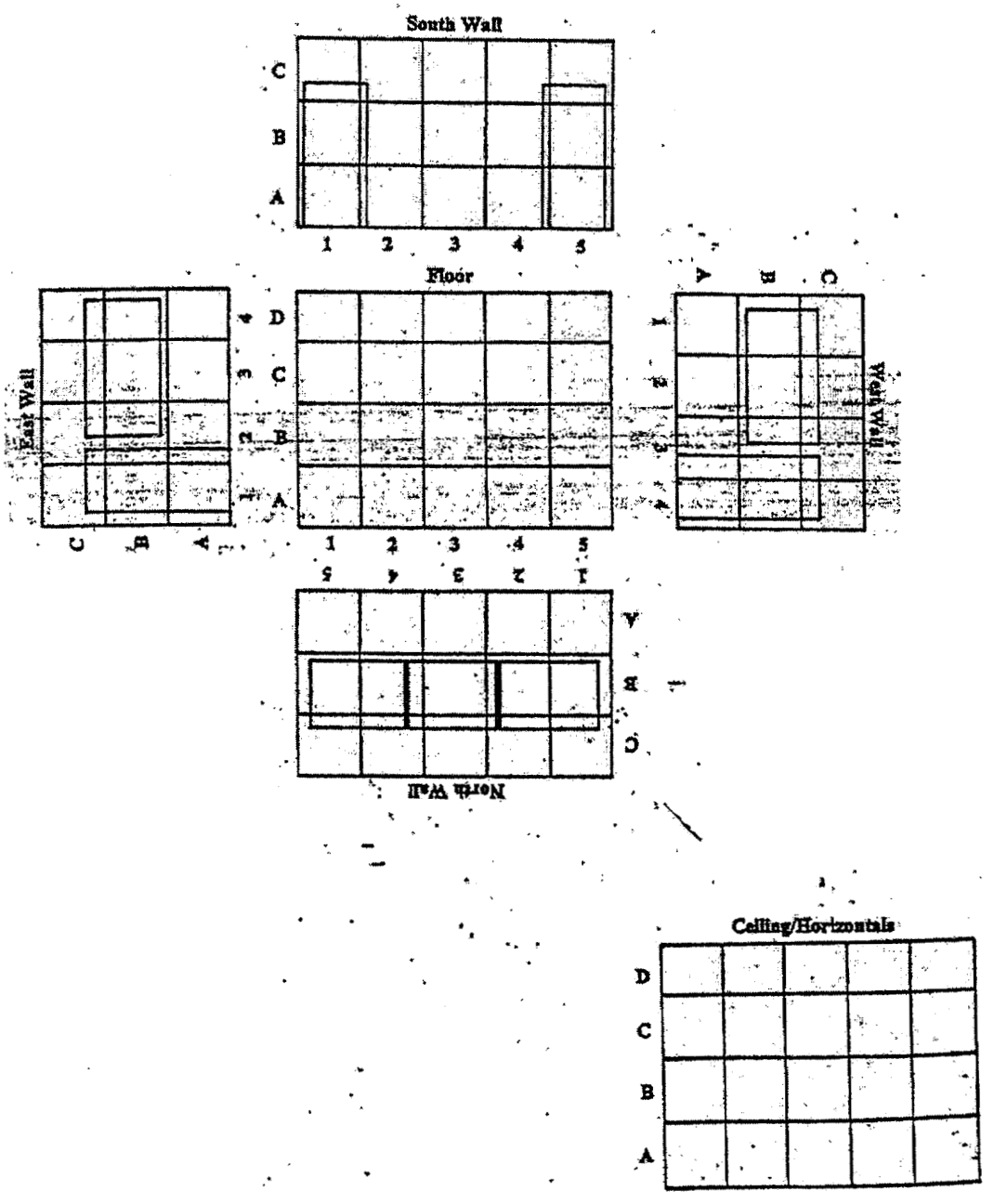


Figure 3, JN6 Grid
Guard Station, Restroom

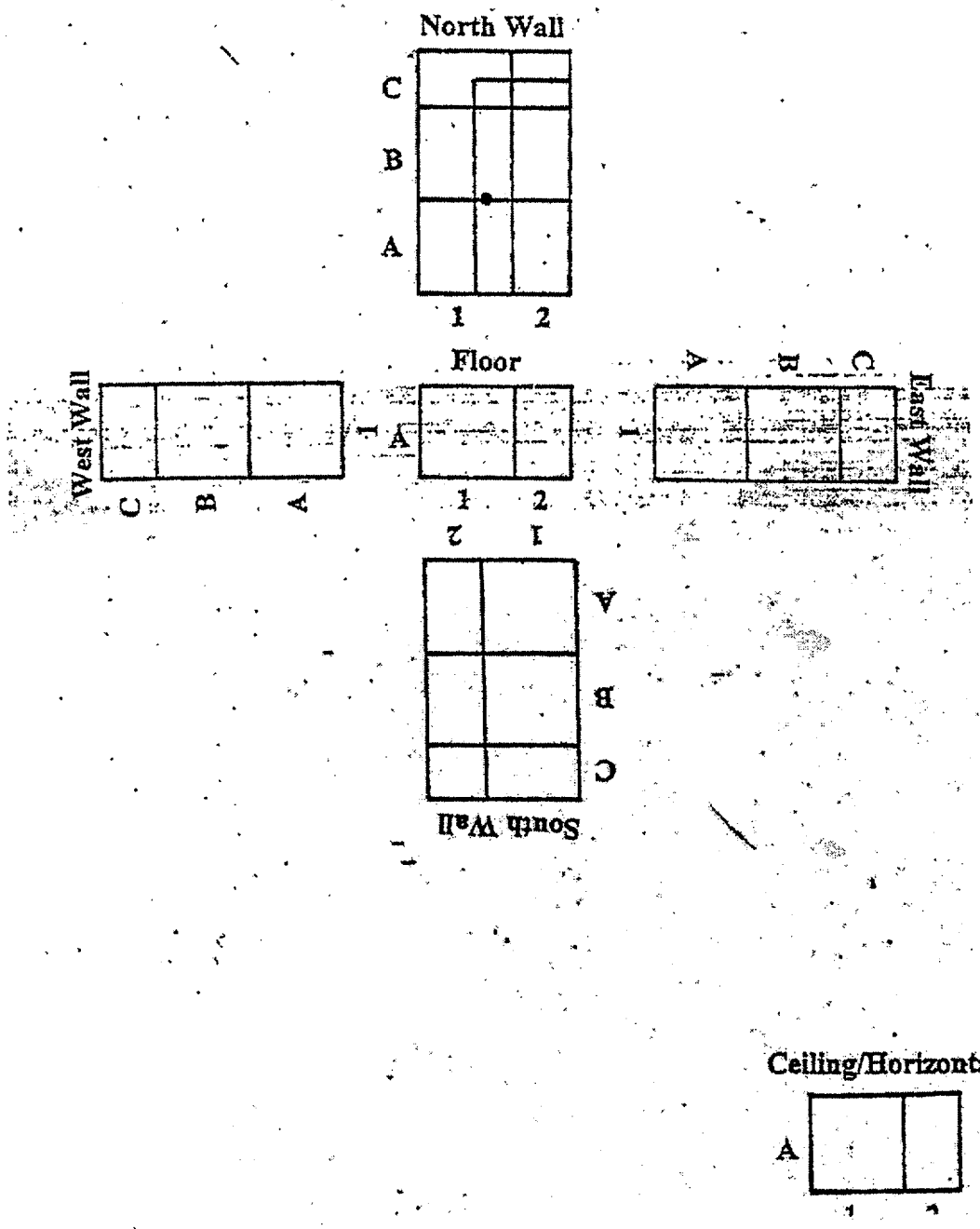
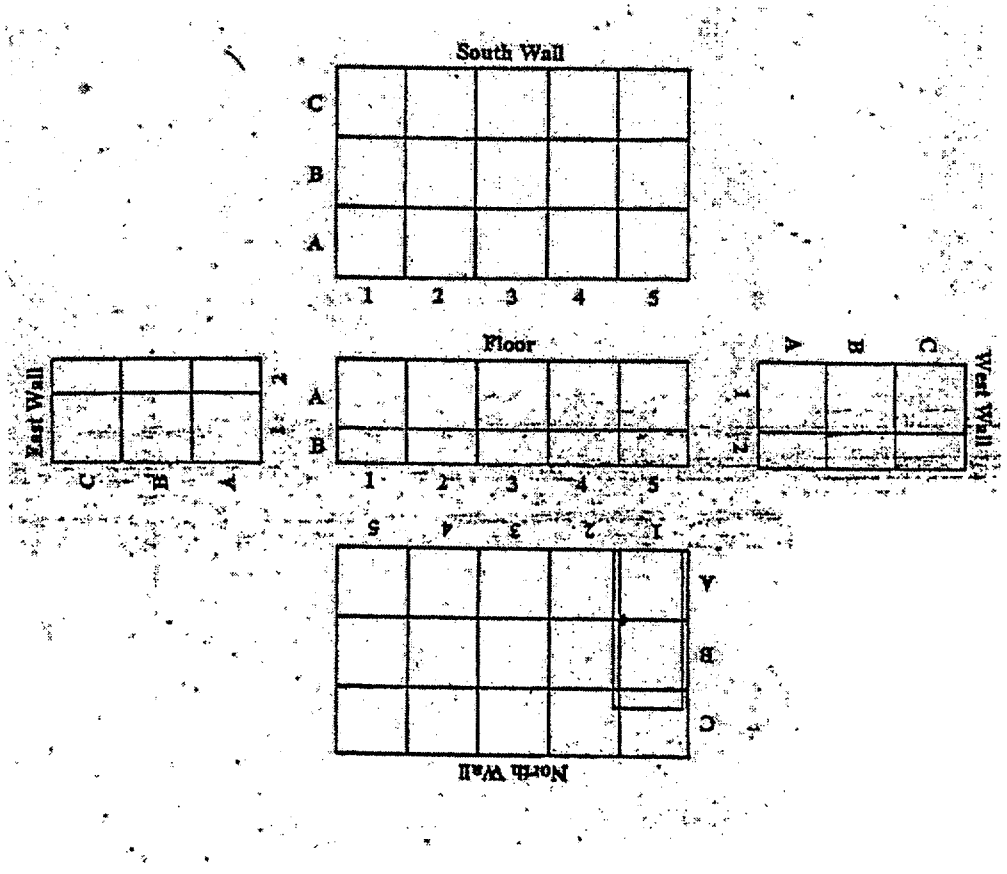


Figure 4, JN6 Grid
Guard Station, Utility Room



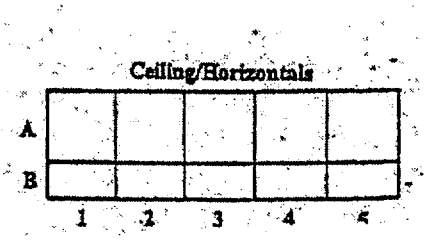


Figure 5, JN6 Grid
Guard Station, Utility Room

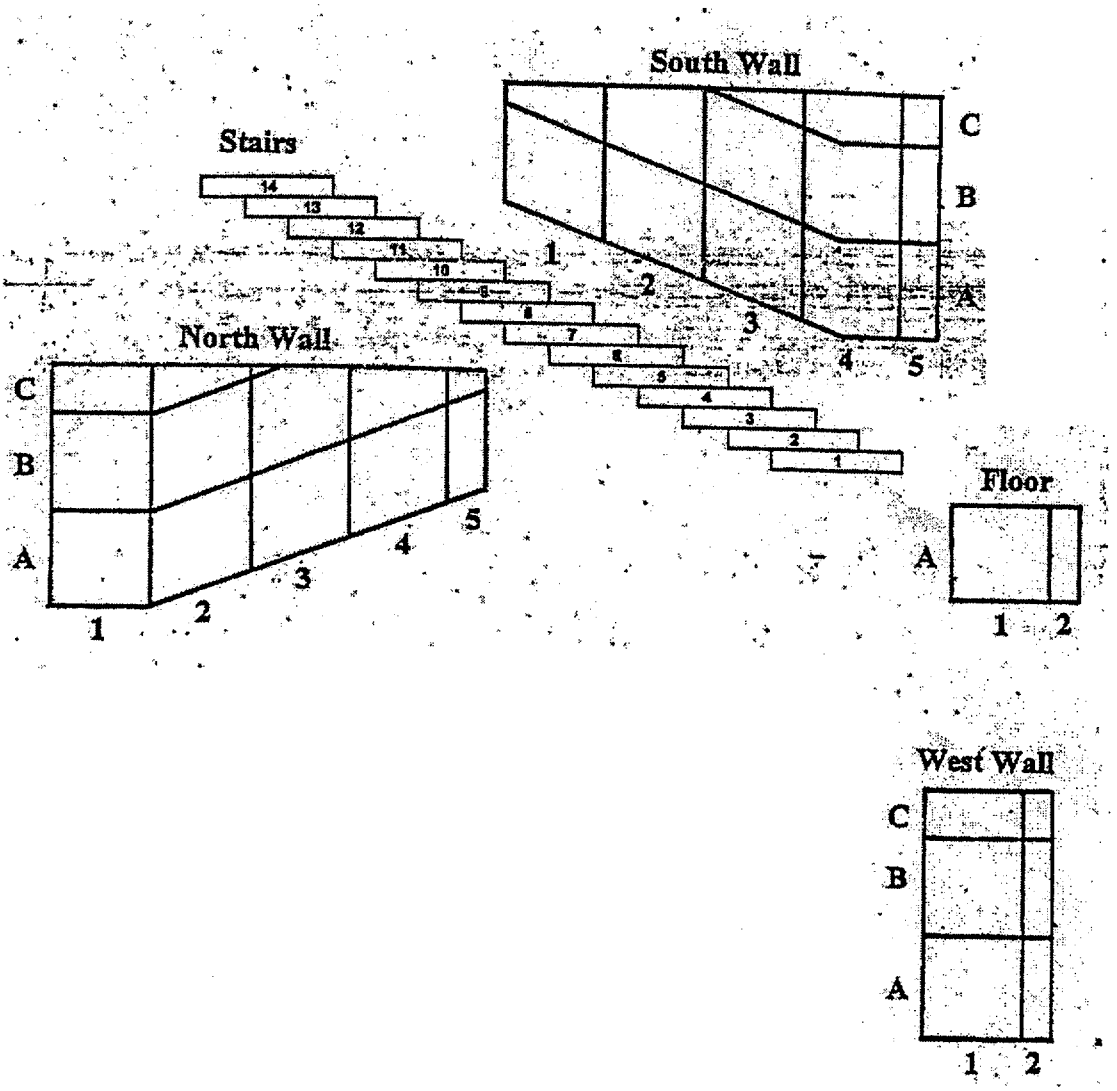


Figure 6, JN6 Grid
Guard Station, Second Floor

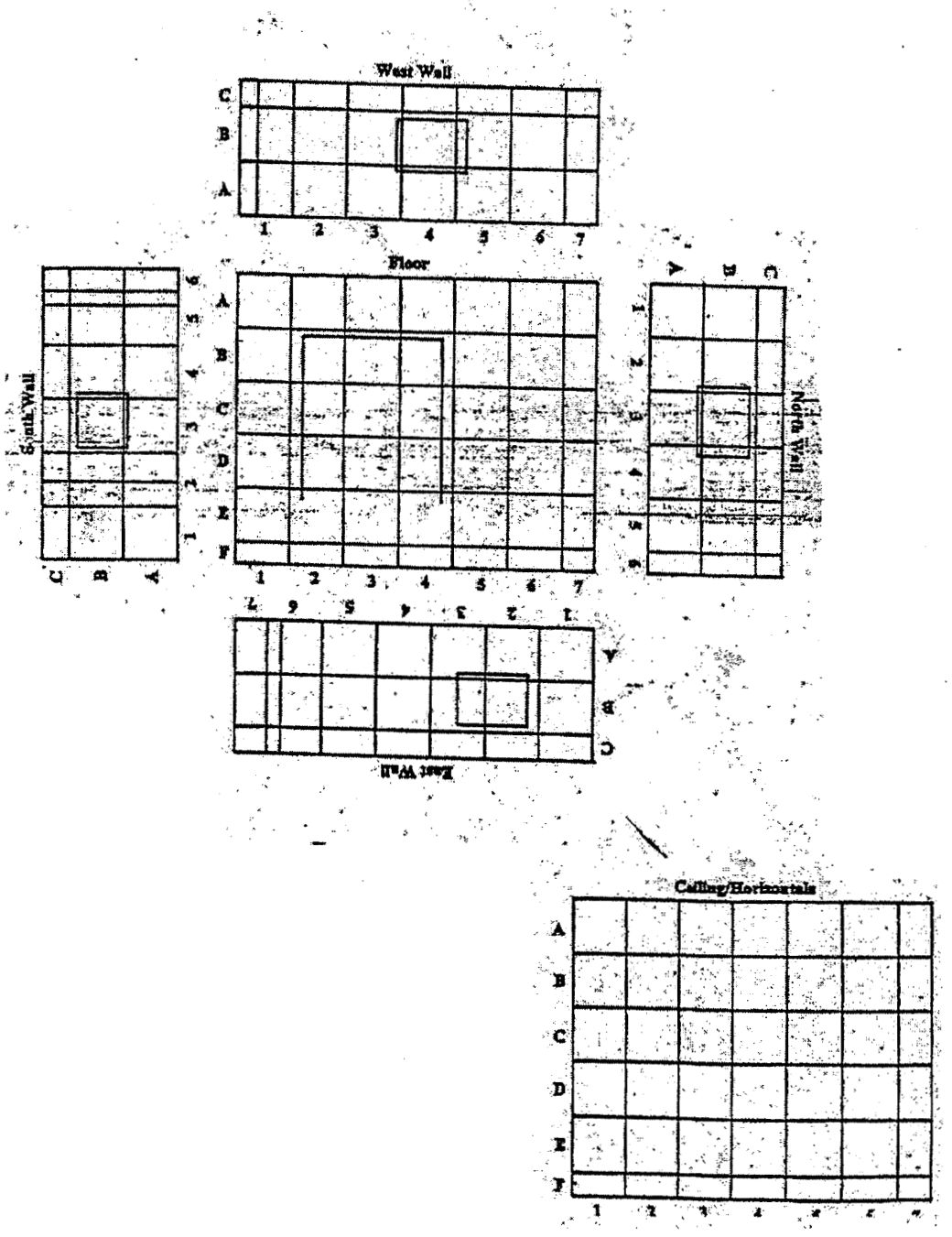


Figure 7, JN6 Grid
Guard Station, Exterior Surfaces

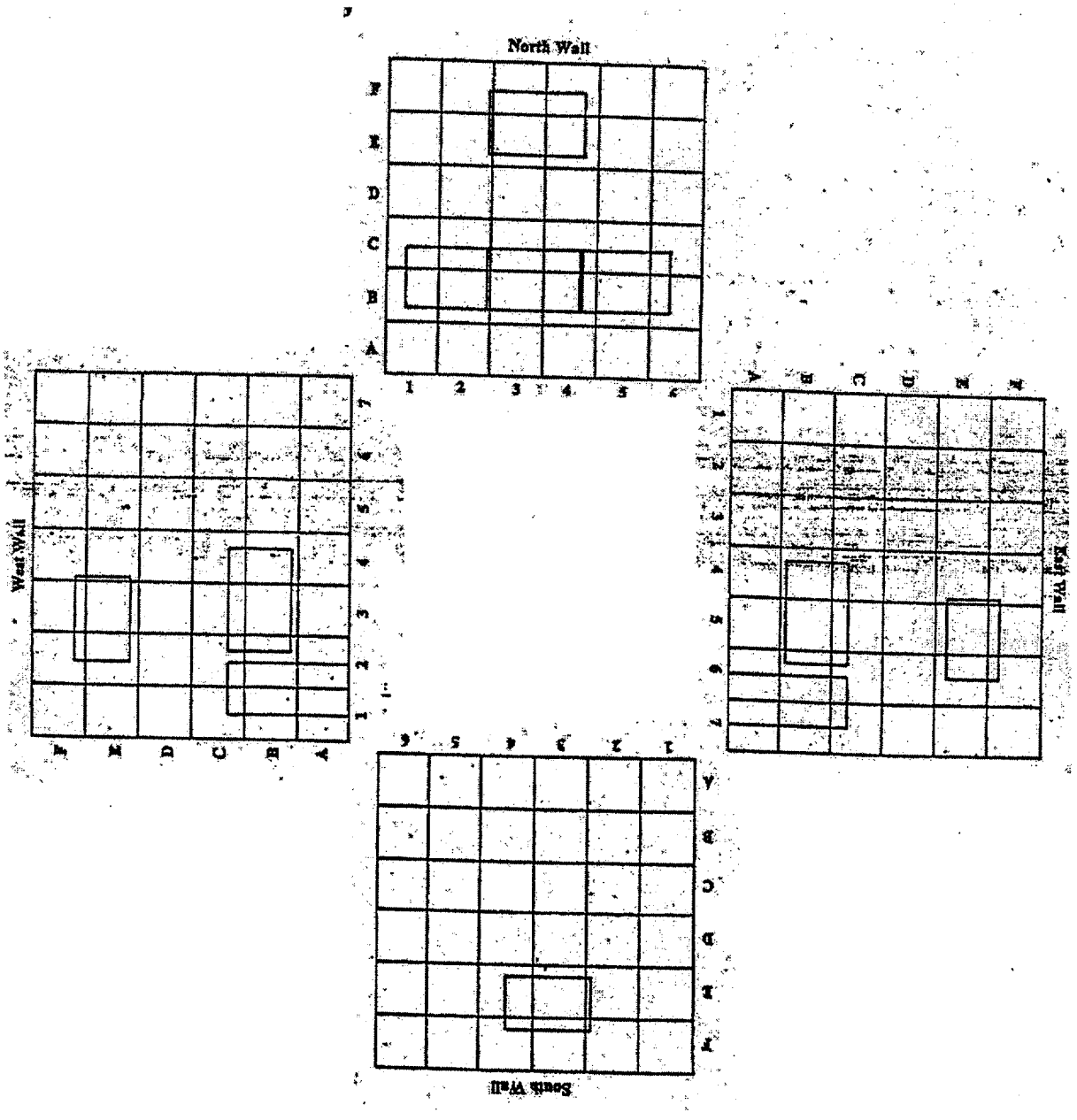
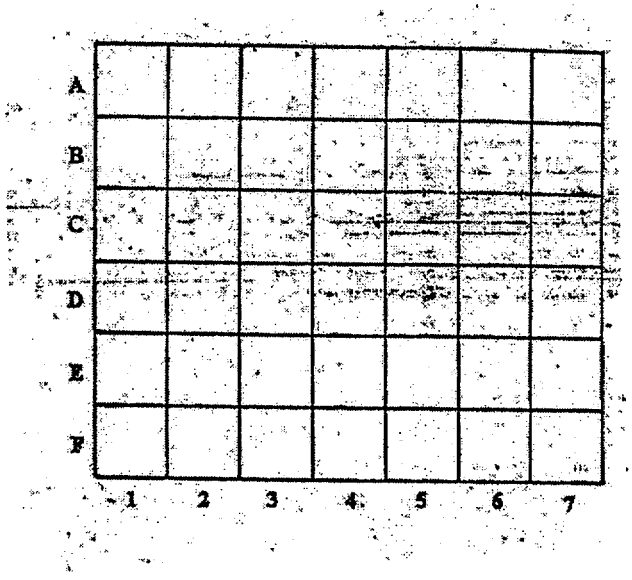


Figure 8, JN6 Grid
Guard Station, Roof



TABLES

Table 1
Surface Contamination Guidelines for BCLDP

Radionuclides [2]	Allowable Total Residual Surface Contamination (dpm/100 cm^2)[1]		
	Average [3,4]	Maximum [4,3]	Removable [4,6]
Transuranics, 1-125, 1-129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231	Reserved (100)*	Reserved (300)*	Reserved (20)*
Th-Natural, Sr-90, 1-126, 1-131, 1-133, , Ra-223, Ra-224, U-232, Th-232	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay product, alpha emitters	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others notes above. [7]	5,000	15,000	1,000

(1) 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 measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

(2) Where surface contamination by both alpha-and beta-gamma-emitting radionuclides exists, the limits established for alpha-and beta-gamma-emitting radionuclides should apply independently.

(3) Measurements of average contamination should not be averaged over an area of more than $1m^2$. For objects of less surface area, the average should be derived for each such object.

(4) The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr and 1.0 mrad/hr., respectively, at 1 cm.

(5) The maximum contamination level applies to an area of not more than 100 cm^2.

(6) The amount of removable material per 100 cm^2 of surface area should be determined by wiping and area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

(7) This category of radionuclides includes mixed fission products, including the Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

* Regulatory Guide 1.86

TABLE 2
BCLDP GUIDELINES FOR RESIDUAL
RADIOACTIVITY CONCENTRATIONS FOR SOIL AND SOLID VOLUMES

Radionuclide[a]	King Avenue Concentration (pCi/g)[b]	West Jefferson Concentration (pCi/g)[b]
Natural Uranium	10[1]	na[c]
Enriched Uranium	30[1]	30[1]
Depleted Uranium	35[1]	35[1]
Ac-227	19	19
Am-241	na[c]	270
Am-243	na	140
Ce-144	na	2,100
Cm-243	na	0.79
Cm-244	na	1.0
Co-60	8[2]	8[2]
Cs-134	na	33
Cs-137	15[2]	15[2]
C-14	940	940
Eu-152	na	390
Eu-154	na	260
Eu-155	na	1,900
Fe-55	na	2.7E+07
H-3[d]	41,000	38,000
I-129	na	13
Mn-54	na	61
Ni-59	na	1.3E+07
Ni-63	na	4.9E+06
Np-237	na	0.58
Pa-231	18	18
Pb-210	140	na
Pu-238	na	320
Pu-239	na	290
Pu-240	na	290
Pu-241	na	13,000
Pu-242	na	310
Ra-226 (0-15 cm of soil)	5[2,3]	na

Radionuclide[a]	King Avenue Concentration (pCi/g)[b]	West Jefferson Concentration (pCi/g)[b]
Ra-226 (>15 cm of soil)	15[2,3]	na
Ra-228	5[2,3]	na
Ru-106	na	180
Sb-125	na	1,100
Sm-151	na	6,700
Sr-90	5[2]	5[2]
Th-228	29	na
Th-230	5[3]	na
Th-232	5[3]	na

Table 2 Notes and References

Notes:

a. Activity concentrations above natural background concentrations. Where more than one radionuclide is present, the sum of the ratios of the individual radionuclide concentrations to their respective concentration limits shall not exceed 1.

b. Concentrations for which no specific reference is cited have been derived from RESRAD calculations and are the more restrictive values calculated for soil deposition at a depth of 5 meters.

c. Indicates that this radionuclide is not expected to be found at the indicated site.

d. Difference in tritium activity concentrations are due to the difference in depths of the water tables at two sites. The water table depth at King Avenue is deeper than that at West Jefferson.

References:

1. Options 1 and 2 of the Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations" (46 FR 52061, October 23, 1981).

2. NRC Memorandum, "Acceptable Cleanup Criteria and Practices for Decontamination and Decommissioning (License No. SNM-7)" dated April 17. 1992, to Harley L. Toy, License Coordinator and Manager, Nuclear Sciences, Battelle Memorial Institute from J.W.N. Hickey, Chief, Fuel Cycle Safety Branch, Division of Industrial and Medical Nuclear Safety, Office of Nuclear Material Safety and Safeguards.

3. DOE Order 5400.5, "Radiation Protection of the Public and the Environment".

Table 3
JN-6 Exposure Rate Surveys

Grid	Surface Medium	Results in µR/hr Gamma	
		Contact	1 Meter
A1	1Floor	9	9
A5	1Floor	10	8
C3	1Floor	9	10
D1	1Floor	10	10
D5	1Floor	7	8
1	SStep	10	9
7	SStep	10	8
14	SStep	10	10
A1	MFloor	10	10
A2	MFloor	10	10
A1	UFloor	7	10
A3	UFloor	8	11
A5	UFloor	8	10
B1	UFloor	7	8
B5	UFloor	7	8
A1	2Floor	11	10
A7	2Floor	10	10
C4	2Floor	8	8
E1	2Floor	11	10
E7	2Floor	11	12

Table 4
JN-6 Radioanalytical Results

Analytical Parameter	RL04-0211 (Utility Room Sump)		RL04-0212 (Utility Room Drain)		RL04-0213 (Mens Room Sink)	
	Result (pCi/g)	2σ (pCi/g)	Result (pCi/g)	2σ (pCi/g)	Result (pCi/g)	2σ (pCi/g)
Be-7	< 0.94	0.00	< 0.89	0.00	< 0.98	0.00
K-40	< 1.67	0.00	< 1.51	0.00	< 1.46	0.00
Co-58	< 0.13	0.00	< 0.10	0.00	< 0.12	0.00
Co-60	< 0.10	0.00	< 0.11	0.00	< 0.11	0.00
Zn-65	< 0.26	0.00	< 0.24	0.00	< 0.23	0.00
Nb-94	< 0.11	0.00	< 0.10	0.00	< 0.11	0.00
Ag-108M	< 0.10	0.00	< 0.10	0.00	< 0.10	0.00
Sb-125	< 0.35	0.00	< 0.31	0.00	< 0.29	0.00
I-131	< 0.16	0.00	< 0.19	0.00	< 0.18	0.00
Ba-133	< 0.15	0.00	< 0.15	0.00	< 0.13	0.00
Cs-134	< 0.11	0.00	< 0.12	0.00	< 0.12	0.00
Cs-137	< 0.13	0.00	< 0.14	0.00	< 0.14	0.00
Eu-152	< 0.24	0.00	< 0.22	0.00	< 0.25	0.00
Eu-154	< 0.17	0.00	< 0.15	0.00	< 0.18	0.00
Tl-208	< 0.14	0.00	< 0.14	0.00	< 0.14	0.00
Bi-212	< 0.16	0.00	< 0.15	0.00	< 0.16	0.00
Pb-212	< 0.21	0.00	< 0.21	0.00	< 0.21	0.00
Bi-214	< 0.31	0.00	< 0.30	0.00	< 0.30	0.00
Pb-214	< 0.25	0.00	< 0.28	0.00	< 0.29	0.00
Ra-226	< 0.29	0.00	< 0.31	0.00	< 0.31	0.00
Ac-228	< 0.45	0.00	< 0.48	0.00	< 0.48	0.00
Th-234	< 1.81	0.00	< 1.80	0.00	< 1.86	0.00
U-235	< 0.18	0.00	< 0.19	0.00	< 0.19	0.00
Np-239	< 0.27	0.00	< 0.25	0.00	< 0.24	0.00
Am-241	< 0.15	0.00	< 0.14	0.00	< 0.16	0.00

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM				Instrument		Results in DPM/100cm²	Smear Results in DPM/100cm²	
			Alpha + Beta BKG		Scan Measurements						
			DLV	Adjusted	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta
A1	1N.Wall	CB	492	37	462	425	0.281	1.8	840	1.74	0.59
A2	1N.Wall	CB	492	37	322	285	0.281	1.8	563	N/A	N/A
A3	1N.Wall	CB	492	37	381	344	0.281	1.8	680	N/A	N/A
A4	1N.Wall	CB	492	37	338	301	0.281	1.8	595	N/A	N/A
A5	1N.Wall	CB	492	37	393	356	0.281	1.8	704	N/A	N/A
B1	1N.Wall	CB	492	37	342	305	0.281	1.8	603	N/A	N/A
B5	1N.Wall	CB	492	37	277	240	0.281	1.8	474	N/A	N/A
A1	1E.Wall	CB	492	37	272	235	0.281	1.8	465	N/A	N/A
A2	1E.Wall	CB	492	37	339	302	0.281	1.8	597	N/A	N/A
A3	1E.Wall	CB	492	37	359	322	0.281	1.8	637	N/A	N/A
A4	1E.Wall	CB	492	37	295	258	0.281	1.8	510	-0.07	-0.47
A1	1W.Wall	CB	492	37	281	244	0.281	1.8	482	N/A	N/A
A2	1W.Wall	CB	492	37	314	277	0.281	1.8	548	N/A	N/A
A3	1W.Wall	CB	492	37	271	234	0.281	1.8	463	N/A	N/A
B1	1W.Wall	CB	492	37	264	227	0.281	1.8	449	N/A	N/A
B3	1W.Wall	CB	492	37	207	170	0.281	1.8	336	N/A	N/A
B1	1N.Wall	L	466	92	311	219	0.281	1.8	433	3.55	5.94
B2	1N.Wall	L	466	92	313	221	0.281	1.8	437	N/A	N/A
B3	1N.Wall	L	466	92	326	234	0.281	1.8	463	N/A	N/A
B4	1N.Wall	L	466	92	315	223	0.281	1.8	441	N/A	N/A
B5	1N.Wall	L	466	92	271	179	0.281	1.8	354	N/A	N/A
A1	1E.Wall	L	466	92	369	277	0.281	1.8	548	N/A	N/A
B1	1E.Wall	L	466	92	338	246	0.281	1.8	486	N/A	N/A
B2	1E.Wall	L	466	92	325	233	0.281	1.8	461	N/A	N/A
B3	1E.Wall	L	466	92	312	220	0.281	1.8	435	N/A	N/A
B4	1E.Wall	L	466	92	304	212	0.281	1.8	419	N/A	N/A
A1	1S.Wall	L	466	92	294	202	0.281	1.8	399	-0.07	-0.47
A2	1S.Wall	L	466	92	271	179	0.281	1.8	354	N/A	N/A
A3	1S.Wall	L	466	92	326	234	0.281	1.8	463	N/A	N/A
A4	1S.Wall	L	466	92	282	190	0.281	1.8	376	N/A	N/A
A5	1S.Wall	L	466	92	313	221	0.281	1.8	437	N/A	N/A
B1	1S.Wall	L	466	92	302	210	0.281	1.8	415	N/A	N/A
B2	1S.Wall	L	466	92	295	203	0.281	1.8	401	N/A	N/A
B3	1S.Wall	L	466	92	273	181	0.281	1.8	358	N/A	N/A
B4	1S.Wall	L	466	92	283	191	0.281	1.8	378	N/A	N/A
B5	1S.Wall	L	466	92	243	151	0.281	1.8	299	N/A	N/A
A3	1W.Wall	L	466	92	281	189	0.281	1.8	374	-0.07	-1.53
A4	1W.Wall	L	466	92	371	279	0.281	1.8	552	N/A	N/A
B1	1W.Wall	L	466	92	305	213	0.281	1.8	421	N/A	N/A
B2	1W.Wall	L	466	92	277	185	0.281	1.8	366	N/A	N/A
B3	1W.Wall	L	466	92	235	143	0.281	1.8	283	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
B4	1W.Wall	L	466	92	255	163	0.281	1.8	322	N/A	N/A
A1	1Floor	L	466	92	389	297	0.281	1.8	587	1.74	-0.47
A2	1Floor	L	466	92	366	274	0.281	1.8	542	N/A	N/A
A3	1Floor	L	466	92	374	282	0.281	1.8	558	N/A	N/A
A4	1Floor	L	466	92	398	306	0.281	1.8	605	N/A	N/A
A5	1Floor	L	466	92	383	291	0.281	1.8	575	N/A	N/A
B1	1Floor	L	466	92	366	274	0.281	1.8	542	N/A	N/A
B2	1Floor	L	466	92	325	233	0.281	1.8	461	N/A	N/A
B3	1Floor	L	466	92	341	249	0.281	1.8	492	N/A	N/A
B4	1Floor	L	466	92	315	223	0.281	1.8	441	N/A	N/A
B5	1Floor	L	466	92	396	304	0.281	1.8	601	N/A	N/A
C1	1Floor	L	466	92	272	180	0.281	1.8	356	-0.07	-2.6
C2	1Floor	L	466	92	292	200	0.281	1.8	395	N/A	N/A
C3	1Floor	L	466	92	298	206	0.281	1.8	407	N/A	N/A
C4	1Floor	L	466	92	277	185	0.281	1.8	366	N/A	N/A
C5	1Floor	L	466	92	293	201	0.281	1.8	397	N/A	N/A
D1	1Floor	L	466	92	278	186	0.281	1.8	368	N/A	N/A
D2	1Floor	L	466	92	253	161	0.281	1.8	318	N/A	N/A
D3	1Floor	L	466	92	313	221	0.281	1.8	437	N/A	N/A
D4	1Floor	L	466	92	290	198	0.281	1.8	391	N/A	N/A
D5	1Floor	L	466	92	271	179	0.281	1.8	354	N/A	N/A
A1	SNWall	L	466	92	267	175	0.277	1.8	351	-0.07	-0.47
A2	SNWall	L	466	92	254	162	0.277	1.8	325	N/A	N/A
A3	SNWall	L	466	92	261	169	0.277	1.8	339	N/A	N/A
A4	SNWall	L	466	92	256	164	0.277	1.8	329	N/A	N/A
A5	SNWall	L	466	92	258	166	0.277	1.8	333	N/A	N/A
B1	SNWall	L	466	92	227	135	0.277	1.8	271	N/A	N/A
B2	SNWall	L	466	92	248	156	0.277	1.8	313	N/A	N/A
B3	SNWall	L	466	92	261	169	0.277	1.8	339	N/A	N/A
B4	SNWall	L	466	92	267	175	0.277	1.8	351	N/A	N/A
B5	SNWall	L	466	92	241	149	0.277	1.8	299	-0.07	1.66
A1	SSWall	L	466	92	281	189	0.277	1.8	379	N/A	N/A
A2	SSWall	L	466	92	243	151	0.277	1.8	303	N/A	N/A
A3	SSWall	L	466	92	263	171	0.277	1.8	343	N/A	N/A
A4	SSWall	L	466	92	251	159	0.277	1.8	319	N/A	N/A
A5	SSWall	L	466	92	249	157	0.277	1.8	315	N/A	N/A
B1	SSWall	L	466	92	277	185	0.277	1.8	371	N/A	N/A
B2	SSWall	L	466	92	288	196	0.277	1.8	393	N/A	N/A
B3	SSWall	L	466	92	318	226	0.277	1.8	453	N/A	N/A
B4	SSWall	L	466	92	309	217	0.277	1.8	435	-0.07	1.66
B5	SSWall	L	466	92	284	192	0.277	1.8	385	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	SWWall	CB	492	37	344	307	0.277	1.8	616	-0.07	-0.47
B1	SWWall	CB	492	37	340	303	0.277	1.8	608	N/A	N/A
A1	Sfloor	CF	635	187	318	131	0.277	1.8	263	-0.07	-1.53
1	SStep	L	466	92	274	182	0.277	1.8	365	-0.07	-0.47
2	SStep	L	466	92	290	198	0.277	1.8	397	N/A	N/A
3	SStep	L	466	92	269	177	0.277	1.8	355	N/A	N/A
4	SStep	L	466	92	411	319	0.277	1.8	640	N/A	N/A
5	SStep	L	466	92	249	157	0.277	1.8	315	N/A	N/A
6	SStep	L	466	92	327	235	0.277	1.8	471	N/A	N/A
7	SStep	L	466	92	265	173	0.277	1.8	347	N/A	N/A
8	SStep	L	466	92	235	143	0.277	1.8	287	N/A	N/A
9	SStep	L	466	92	351	259	0.277	1.8	519	N/A	N/A
10	SStep	L	466	92	238	146	0.277	1.8	293	-0.07	-1.53
11	SStep	L	466	92	229	137	0.277	1.8	275	N/A	N/A
12	SStep	L	466	92	328	236	0.277	1.8	473	N/A	N/A
13	SStep	L	466	92	343	251	0.277	1.8	503	N/A	N/A
14	SStep	L	466	92	297	205	0.277	1.8	411	N/A	N/A
A4	Ceiling	L	466	92	362	270	0.281	1.8	534	-0.07	-2.6
B4	Ceiling	L	466	92	372	280	0.281	1.8	554	N/A	N/A
B1	Horiz.	L	466	92	250	158	0.281	1.8	312	1.74	2.73
C4	Horiz.	L	466	92	330	238	0.281	1.8	471	N/A	N/A
A1	MFloor	L	466	92	315	223	0.281	1.8	441	1.74	0.59
A2	MFloor	L	466	92	311	219	0.281	1.8	433	N/A	N/A
A1	MEWall	CB	492	37	336	299	0.281	1.8	591	-0.07	1.66
B1	MEWall	CB	492	37	285	248	0.281	1.8	490	N/A	N/A
C1	MEWall	CB	492	37	279	242	0.281	1.8	478	N/A	N/A
A1	MSWall	L	466	92	261	169	0.281	1.8	334	-0.07	3.8
A2	MSWall	L	466	92	271	179	0.281	1.8	354	N/A	N/A
B1	MSWall	L	466	92	273	181	0.281	1.8	358	N/A	N/A
B2	MSWall	L	466	92	240	148	0.281	1.8	293	N/A	N/A
A1	MWWall	L	466	92	270	178	0.281	1.8	352	N/A	N/A
B1	MWWall	L	466	92	295	203	0.281	1.8	401	N/A	N/A
A1	MNWall	L	466	92	188	96	0.281	1.8	190	N/A	N/A
A2	MNWall	L	466	92	253	161	0.281	1.8	318	N/A	N/A
B1	MNWall	L	466	92	214	122	0.281	1.8	241	N/A	N/A
B2	MNWall	L	466	92	196	104	0.281	1.8	206	N/A	N/A
A1	MCeiling	L	466	92	329	237	0.281	1.8	469	-0.07	1.66
A1	UFloor	CF	635	187	284	97	0.281	1.8	192	-0.07	1.66
A2	UFloor	CF	635	187	370	183	0.281	1.8	362	N/A	N/A
A3	UFloor	CF	635	187	355	168	0.281	1.8	332	N/A	N/A
A4	UFloor	CF	635	187	380	193	0.281	1.8	382	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A5	UFloor	CF	635	187	387	200	0.281	1.8	395	N/A	N/A
B1	UFloor	CF	635	187	251	64	0.281	1.8	127	N/A	N/A
B2	UFloor	CF	635	187	382	195	0.281	1.8	386	N/A	N/A
B3	UFloor	CF	635	187	325	138	0.281	1.8	273	N/A	N/A
B4	UFloor	CF	635	187	293	106	0.281	1.8	210	N/A	N/A
B5	UFloor	CF	635	187	386	199	0.281	1.8	393	N/A	N/A
A2	UFloor	L	466	92	288	196	0.281	1.8	388	-0.07	4.87
A3	UFloor	L	466	92	262	170	0.281	1.8	336	N/A	N/A
A1	2Floor	L	466	92	324	232	0.277	1.8	465	-0.07	-0.47
A2	2Floor	L	466	92	307	215	0.277	1.8	431	N/A	N/A
A3	2Floor	L	466	92	253	161	0.277	1.8	323	N/A	N/A
A4	2Floor	L	466	92	247	155	0.277	1.8	311	N/A	N/A
A5	2Floor	L	466	92	372	280	0.277	1.8	562	N/A	N/A
A6	2Floor	L	466	92	307	215	0.277	1.8	431	N/A	N/A
A7	2Floor	L	466	92	296	204	0.277	1.8	409	N/A	N/A
B1	2Floor	L	466	92	347	255	0.277	1.8	511	N/A	N/A
B2	2Floor	L	466	92	259	167	0.277	1.8	335	N/A	N/A
B3	2Floor	L	466	92	238	146	0.277	1.8	293	-0.07	1.66
B4	2Floor	L	466	92	361	269	0.277	1.8	540	N/A	N/A
B5	2Floor	L	466	92	243	151	0.277	1.8	303	N/A	N/A
B6	2Floor	L	466	92	241	149	0.277	1.8	299	N/A	N/A
B7	2Floor	L	466	92	311	219	0.277	1.8	439	N/A	N/A
C1	2Floor	L	466	92	252	160	0.277	1.8	321	N/A	N/A
C2	2Floor	L	466	92	272	180	0.277	1.8	361	N/A	N/A
C3	2Floor	L	466	92	278	186	0.277	1.8	373	N/A	N/A
C4	2Floor	L	466	92	327	235	0.277	1.8	471	N/A	N/A
C5	2Floor	L	466	92	251	159	0.277	1.8	319	1.74	1.66
C6	2Floor	L	466	92	287	195	0.277	1.8	391	N/A	N/A
C7	2Floor	L	466	92	243	151	0.277	1.8	303	N/A	N/A
D1	2Floor	L	466	92	301	209	0.277	1.8	419	N/A	N/A
D2	2Floor	L	466	92	291	199	0.277	1.8	399	N/A	N/A
D3	2Floor	L	466	92	233	141	0.277	1.8	283	N/A	N/A
D4	2Floor	L	466	92	288	196	0.277	1.8	393	N/A	N/A
D5	2Floor	L	466	92	259	167	0.277	1.8	335	N/A	N/A
D6	2Floor	L	466	92	306	214	0.277	1.8	429	N/A	N/A
D7	2Floor	L	466	92	253	161	0.277	1.8	323	-0.07	0.59
E1	2Floor	L	466	92	257	165	0.277	1.8	331	N/A	N/A
E2	2Floor	L	466	92	265	173	0.277	1.8	347	N/A	N/A
E3	2Floor	L	466	92	223	131	0.277	1.8	263	N/A	N/A
E4	2Floor	L	466	92	236	144	0.277	1.8	289	N/A	N/A
E5	2Floor	L	466	92	243	151	0.277	1.8	303	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM				Instrument		Results in DPM/100cm²	Smear Results in DPM/100cm²	
			Alpha + Beta BKG		Scan Measurements						
			DLV	Adjusted	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta
E6	2Floor	L	466	92	281	189	0.277	1.8	379	N/A	N/A
E7	2Floor	L	466	92	307	215	0.277	1.8	431	1.74	-1.53
A1	2NWall	L	466	92	231	139	0.277	1.8	279	-0.07	2.73
A3	2NWall	L	466	92	251	159	0.277	1.8	319	N/A	N/A
A4	2NWall	L	466	92	247	155	0.277	1.8	311	N/A	N/A
B1	2NWall	L	466	92	284	192	0.277	1.8	385	N/A	N/A
B3	2NWall	L	466	92	241	149	0.277	1.8	299	N/A	N/A
B4	2NWall	L	466	92	227	135	0.277	1.8	271	N/A	N/A
A2	2EWall	L	466	92	236	144	0.277	1.8	289	N/A	N/A
A3	2EWall	L	466	92	272	180	0.277	1.8	361	N/A	N/A
B2	2EWall	L	466	92	289	197	0.277	1.8	395	N/A	N/A
B3	2EWall	L	466	92	212	120	0.277	1.8	241	-0.07	-1.53
A1	2SWall	L	466	92	243	151	0.277	1.8	303	N/A	N/A
A2	2SWall	L	466	92	276	184	0.277	1.8	369	N/A	N/A
A3	2SWall	L	466	92	268	176	0.277	1.8	353	N/A	N/A
A4	2SWall	L	466	92	203	111	0.277	1.8	223	N/A	N/A
A5	2SWall	L	466	92	220	128	0.277	1.8	257	N/A	N/A
A6	2SWall	L	466	92	243	151	0.277	1.8	303	N/A	N/A
B1	2SWall	L	466	92	251	159	0.277	1.8	319	N/A	N/A
B2	2SWall	L	466	92	221	129	0.277	1.8	259	N/A	N/A
B3	2SWall	L	466	92	253	161	0.277	1.8	323	-0.07	-0.47
B4	2SWall	L	466	92	239	147	0.277	1.8	295	N/A	N/A
B5	2SWall	L	466	92	263	171	0.277	1.8	343	N/A	N/A
B6	2SWall	L	466	92	310	218	0.277	1.8	437	N/A	N/A
A1	2WWall	L	466	92	239	147	0.277	1.8	295	N/A	N/A
A5	2WWall	L	466	92	241	149	0.277	1.8	299	N/A	N/A
A6	2WWall	L	466	92	291	199	0.277	1.8	399	N/A	N/A
B1	2WWall	L	466	92	255	163	0.277	1.8	327	N/A	N/A
B5	2WWall	L	466	92	233	141	0.277	1.8	283	N/A	N/A
B6	2WWall	L	466	92	264	172	0.277	1.8	345	-0.07	0.59
A1	2Sub A	L	466	92	294	202	0.277	1.8	405	N/A	N/A
A2	2Sub A	L	466	92	238	146	0.277	1.8	293	N/A	N/A
A3	2Sub B	L	466	92	247	155	0.277	1.8	311	N/A	N/A
A1	2Sub B	L	466	92	267	175	0.277	1.8	351	N/A	N/A
A2	2Sub B	L	466	92	271	179	0.277	1.8	359	N/A	N/A
A1	2Sub C	L	466	92	257	165	0.277	1.8	331	N/A	N/A
A2	2Sub C	L	466	92	235	143	0.277	1.8	287	N/A	N/A
A3	2Sub C	L	466	92	213	121	0.277	1.8	243	3.55	8.08
A6	2EWall	L	466	92	247	155	0.277	1.8	311	N/A	N/A
A7	2EWall	L	466	92	245	153	0.277	1.8	307	N/A	N/A
B6	2EWall	L	466	92	241	149	0.277	1.8	299	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM				Instrument		Results in DPM/100cm²	Smear Results in DPM/100cm²	
			Alpha + Beta BKG		Scan Measurements						
			DLV	Adjusted	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta
B7	2EWall	L	466	92	248	156	0.277	1.8	313	N/A	N/A
A4	2Sub A	L	466	92	253	161	0.277	1.8	323	N/A	N/A
A4	2Sub C	L	466	92	234	142	0.277	1.8	285	N/A	N/A
A1	2NWall	CB	492	37	471	434	0.277	1.8	870	-0.07	-0.47
A2	2NWall	CB	492	37	362	325	0.277	1.8	652	N/A	N/A
A3	2NWall	CB	492	37	371	334	0.277	1.8	670	N/A	N/A
A4	2NWall	CB	492	37	334	297	0.277	1.8	596	N/A	N/A
A5	2NWall	CB	492	37	374	337	0.277	1.8	676	N/A	N/A
A6	2NWall	CB	492	37	281	244	0.277	1.8	489	N/A	N/A
B1	2NWall	CB	492	37	345	308	0.277	1.8	618	N/A	N/A
B2	2NWall	CB	492	37	315	278	0.277	1.8	558	N/A	N/A
B4	2NWall	CB	492	37	301	264	0.277	1.8	529	N/A	N/A
B5	2NWall	CB	492	37	308	271	0.277	1.8	544	-0.07	-0.47
B6	2NWall	CB	492	37	362	325	0.277	1.8	652	N/A	N/A
A1	2EWall	CB	492	37	317	280	0.277	1.8	562	N/A	N/A
A2	2EWall	CB	492	37	288	251	0.277	1.8	503	N/A	N/A
A3	2EWall	CB	492	37	294	257	0.277	1.8	515	N/A	N/A
A4	2EWall	CB	492	37	298	261	0.277	1.8	523	N/A	N/A
A5	2EWall	CB	492	37	287	250	0.277	1.8	501	N/A	N/A
A6	2EWall	CB	492	37	357	320	0.277	1.8	642	N/A	N/A
B1	2EWall	CB	492	37	282	245	0.277	1.8	491	N/A	N/A
B2	2EWall	CB	492	37	303	266	0.277	1.8	533	-0.07	0.59
B4	2EWall	CB	492	37	283	246	0.277	1.8	493	N/A	N/A
B5	2EWall	CB	492	37	301	264	0.277	1.8	529	N/A	N/A
B6	2EWall	CB	492	37	253	216	0.277	1.8	433	N/A	N/A
A2	2SWall	CB	492	37	289	252	0.277	1.8	505	N/A	N/A
A3	2SWall	CB	492	37	295	258	0.277	1.8	517	N/A	N/A
A4	2SWall	CB	492	37	335	298	0.277	1.8	598	N/A	N/A
A5	2SWall	CB	492	37	297	260	0.277	1.8	521	N/A	N/A
B2	2SWall	CB	492	37	311	274	0.277	1.8	550	N/A	N/A
B4	2SWall	CB	492	37	314	277	0.277	1.8	556	-0.07	0.59
B5	2SWall	CB	492	37	293	256	0.277	1.8	513	N/A	N/A
A1	2WWall	CB	492	37	348	311	0.277	1.8	624	N/A	N/A
A2	2WWall	CB	492	37	354	317	0.277	1.8	636	N/A	N/A
A3	2WWall	CB	492	37	362	325	0.277	1.8	652	N/A	N/A
A4	2WWall	CB	492	37	322	285	0.277	1.8	572	N/A	N/A
A5	2WWall	CB	492	37	304	267	0.277	1.8	535	N/A	N/A
A6	2WWall	CB	492	37	323	286	0.277	1.8	574	N/A	N/A
A7	2WWall	CB	492	37	315	278	0.277	1.8	558	N/A	N/A
B1	2WWall	CB	492	37	355	318	0.277	1.8	638	-0.07	-0.47
B2	2WWall	CB	492	37	386	349	0.277	1.8	700	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
B3	2WWall	CB	492	37	321	284	0.277	1.8	570	N/A	N/A
B4	2WWall	CB	492	37	328	291	0.277	1.8	584	N/A	N/A
B6	2WWall	CB	492	37	411	374	0.277	1.8	750	N/A	N/A
B7	2WWall	CB	492	37	293	256	0.277	1.8	513	N/A	N/A
C5	2NWall	CB	492	37	332	295	0.277	1.8	592	N/A	N/A
C4	2EWall	CB	492	37	363	326	0.277	1.8	654	N/A	N/A
C3	2SWall	CB	492	37	376	339	0.277	1.8	680	-0.07	0.59
A2	2Ceiling	L	466	92	273	181	0.277	1.8	363	-0.07	2.73
B5	2Ceiling	L	466	92	342	250	0.277	1.8	501	N/A	N/A
C3	2Ceiling	L	466	92	301	209	0.277	1.8	419	N/A	N/A
D6	2Ceiling	L	466	92	318	226	0.277	1.8	453	N/A	N/A
E4	2Ceiling	L	466	92	309	217	0.277	1.8	435	N/A	N/A
A1	UEWall	CB	492	37	266	229	0.281	1.8	453	-0.07	2.73
A2	UEWall	CB	492	37	302	265	0.281	1.8	524	N/A	N/A
B1	UEWall	CB	492	37	262	225	0.281	1.8	445	N/A	N/A
B2	UEWall	CB	492	37	277	240	0.281	1.8	474	N/A	N/A
A1	USWall	CB	492	37	315	278	0.281	1.8	550	N/A	N/A
A2	USWall	CB	492	37	282	245	0.281	1.8	484	N/A	N/A
A3	USWall	CB	492	37	309	272	0.281	1.8	538	N/A	N/A
A4	USWall	CB	492	37	N/A	#VALUE!	0.281	1.8	N/A	N/A	N/A
A4	USWall	CB	492	37	263	226	0.281	1.8	447	N/A	N/A
A5	USWall	CB	492	37	293	256	0.281	1.8	506	N/A	N/A
B1	USWall	CB	492	37	322	285	0.281	1.8	563	-0.07	0.59
B2	USWall	CB	492	37	311	274	0.281	1.8	542	N/A	N/A
B3	USWall	CB	492	37	266	229	0.281	1.8	453	N/A	N/A
B4	USWall	CB	492	37	300	263	0.281	1.8	520	N/A	N/A
B5	USWall	CB	492	37	312	275	0.281	1.8	544	N/A	N/A
A1	UWWall	CB	492	37	251	214	0.281	1.8	423	N/A	N/A
A2	UWWall	CB	492	37	187	150	0.281	1.8	297	N/A	N/A
B1	UWWall	CB	492	37	192	155	0.281	1.8	306	N/A	N/A
B2	UWWall	CB	492	37	245	208	0.281	1.8	411	N/A	N/A
A2	USWall	L	466	92	245	153	0.281	1.8	302	-0.07	-1.53
A3	USWall	L	466	92	233	141	0.281	1.8	279	N/A	N/A
A4	USWall	L	466	92	221	129	0.281	1.8	255	N/A	N/A
A5	USWall	L	466	92	287	195	0.281	1.8	386	N/A	N/A
B2	USWall	L	466	92	337	245	0.281	1.8	484	N/A	N/A
B3	USWall	L	466	92	278	186	0.281	1.8	368	N/A	N/A
B4	USWall	L	466	92	237	145	0.281	1.8	287	N/A	N/A
B5	USWall	L	466	92	242	150	0.281	1.8	297	N/A	N/A
A1	UWWall	L	466	92	258	166	0.281	1.8	328	N/A	N/A
A2	UWWall	L	466	92	282	190	0.281	1.8	376	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
B1	UWWall	L	466	92	336	244	0.281	1.8	482	-0.07	0.59
B2	UWWall	L	466	92	264	172	0.281	1.8	340	N/A	N/A
A1	UNWall	L	466	92	218	126	0.281	1.8	249	N/A	N/A
A2	UNWall	L	466	92	249	157	0.281	1.8	310	N/A	N/A
A3	UNWall	L	466	92	184	92	0.281	1.8	182	N/A	N/A
A4	UNWall	L	466	92	263	171	0.281	1.8	338	N/A	N/A
A5	UNWall	L	466	92	279	187	0.281	1.8	370	N/A	N/A
B1	UNWall	L	466	92	271	179	0.281	1.8	354	N/A	N/A
B2	UNWall	L	466	92	250	158	0.281	1.8	312	-0.07	0.59
B3	UNWall	L	466	92	302	210	0.281	1.8	415	N/A	N/A
B4	UNWall	L	466	92	284	192	0.281	1.8	380	N/A	N/A
B5	UNWall	L	466	92	312	220	0.281	1.8	435	N/A	N/A
A1	UCeiling	L	466	92	321	229	0.281	1.8	453	-0.07	-0.47
A2	UCeiling	L	466	92	286	194	0.281	1.8	384	N/A	N/A
A3	UCeiling	L	466	92	292	200	0.281	1.8	395	N/A	N/A
A4	UCeiling	L	466	92	301	209	0.281	1.8	413	N/A	N/A
A5	UCeiling	L	466	92	311	219	0.281	1.8	433	N/A	N/A
B1	UCeiling	L	466	92	402	310	0.281	1.8	613	N/A	N/A
B2	UCeiling	L	466	92	377	285	0.281	1.8	563	N/A	N/A
B3	UCeiling	L	466	92	311	219	0.281	1.8	433	N/A	N/A
B4	UCeiling	L	466	92	401	309	0.281	1.8	611	N/A	N/A
B5	UCeiling	L	466	92	386	294	0.281	1.8	581	N/A	N/A
A1	UHoriz	L	466	92	321	229	0.281	1.8	453	-0.07	0.59
A2	UHoriz	L	466	92	286	194	0.281	1.8	384	N/A	N/A
A3	UHoriz	L	466	92	311	219	0.281	1.8	433	N/A	N/A
A4	UHoriz	L	466	92	287	195	0.281	1.8	386	N/A	N/A
A5	UHoriz	L	466	92	305	213	0.281	1.8	421	N/A	N/A
B1	UHoriz	L	466	92	342	250	0.281	1.8	494	N/A	N/A
B2	UHoriz	L	466	92	327	235	0.281	1.8	465	N/A	N/A
B3	UHoriz	L	466	92	369	277	0.281	1.8	548	N/A	N/A
B4	UHoriz	L	466	92	352	260	0.281	1.8	514	N/A	N/A
B5	UHoriz	L	466	92	386	294	0.281	1.8	581	N/A	N/A
A1	NWall	B	807	457	505	48	0.277	1.8	96	1.74	2.73
A2	NWall	B	807	457	557	100	0.277	1.8	201	N/A	N/A
A3	NWall	B	807	457	610	153	0.277	1.8	307	N/A	N/A
A4	NWall	B	807	457	759	302	0.277	1.8	606	N/A	N/A
A5	NWall	B	807	457	541	84	0.277	1.8	168	N/A	N/A
A6	NWall	B	807	457	520	63	0.277	1.8	126	N/A	N/A
A1	EWall	B	807	457	601	144	0.277	1.8	289	N/A	N/A
A2	EWall	B	807	457	649	192	0.277	1.8	385	N/A	N/A
A3	EWall	B	807	457	502	45	0.277	1.8	90	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A4	EWall	B	807	457	720	263	0.277	1.8	527	-0.07	1.66
A5	EWall	B	807	457	611	154	0.277	1.8	309	N/A	N/A
B1	EWall	B	807	457	558	101	0.277	1.8	203	N/A	N/A
B2	EWall	B	807	457	519	62	0.277	1.8	124	N/A	N/A
B3	EWall	B	807	457	538	81	0.277	1.8	162	N/A	N/A
C2	EWall	B	807	457	616	159	0.277	1.8	319	N/A	N/A
A1	SWall	B	807	457	545	88	0.277	1.8	176	N/A	N/A
A2	SWall	B	807	457	508	51	0.277	1.8	102	N/A	N/A
A3	SWall	B	807	457	511	54	0.277	1.8	108	N/A	N/A
A4	SWall	B	807	457	489	32	0.277	1.8	64	-0.07	1.66
A5	SWall	B	807	457	494	37	0.277	1.8	74	N/A	N/A
A6	SWall	B	807	457	518	61	0.277	1.8	122	N/A	N/A
B1	SWall	B	807	457	602	145	0.277	1.8	291	N/A	N/A
B4	SWall	B	807	457	467	10	0.277	1.8	20	N/A	N/A
A3	WWall	B	807	457	459	2	0.277	1.8	4	N/A	N/A
A4	WWall	B	807	457	558	101	0.277	1.8	203	N/A	N/A
A5	WWall	B	807	457	463	6	0.277	1.8	12	N/A	N/A
A6	WWall	B	807	457	567	110	0.277	1.8	221	N/A	N/A
A7	WWall	B	807	457	498	41	0.277	1.8	82	-0.07	1.66
B6	WWall	B	807	457	710	253	0.277	1.8	507	N/A	N/A
B7	WWall	B	807	457	613	156	0.277	1.8	313	N/A	N/A
A1	Roof	L	466	92	395	303	0.281	1.8	599	-0.07	15.56
A2	Roof	L	466	92	350	258	0.281	1.8	510	N/A	N/A
A3	Roof	L	466	92	329	237	0.281	1.8	469	N/A	N/A
A4	Roof	L	466	92	364	272	0.281	1.8	538	N/A	N/A
A5	Roof	L	466	92	384	292	0.281	1.8	577	N/A	N/A
A6	Roof	L	466	92	446	354	0.281	1.8	700	N/A	N/A
A7	Roof	L	466	92	360	268	0.281	1.8	530	N/A	N/A
B1	Roof	L	466	92	385	293	0.281	1.8	579	N/A	N/A
B2	Roof	L	466	92	393	301	0.281	1.8	595	N/A	N/A
B3	Roof	L	466	92	428	336	0.281	1.8	664	N/A	N/A
B4	Roof	L	466	92	390	298	0.281	1.8	589	5.37	14.49
B5	Roof	L	466	92	356	264	0.281	1.8	522	N/A	N/A
B6	Roof	L	466	92	368	276	0.281	1.8	546	N/A	N/A
B7	Roof	L	466	92	416	324	0.281	1.8	641	N/A	N/A
C1	Roof	L	466	92	371	279	0.281	1.8	552	N/A	N/A
C2	Roof	L	466	92	289	197	0.281	1.8	389	N/A	N/A
C3	Roof	L	466	92	276	184	0.281	1.8	364	N/A	N/A
C4	Roof	L	466	92	405	313	0.281	1.8	619	N/A	N/A
C5	Roof	L	466	92	425	333	0.281	1.8	658	N/A	N/A
C6	Roof	L	466	92	337	245	0.281	1.8	484	1.74	11.29

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 5
JN-6 Scanning Surveys

Grid	Surface Medium	Material Type	Results in CPM				Instrument		Results in DPM/100cm²	Smear Results in DPM/100cm²	
			Alpha + Beta BKG		Scan Measurements						
			DLV	Adjusted	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta
C7	Roof	L	466	92	361	269	0.281	1.8	532	N/A	N/A
D1	Roof	L	466	92	296	204	0.281	1.8	403	N/A	N/A
D2	Roof	L	466	92	311	219	0.281	1.8	433	N/A	N/A
D3	Roof	L	466	92	347	255	0.281	1.8	504	N/A	N/A
D4	Roof	L	466	92	287	195	0.281	1.8	386	N/A	N/A
D5	Roof	L	466	92	336	244	0.281	1.8	482	N/A	N/A
D6	Roof	L	466	92	310	218	0.281	1.8	431	N/A	N/A
D7	Roof	L	466	92	378	286	0.281	1.8	565	N/A	N/A
E1	Roof	L	466	92	374	282	0.281	1.8	558	N/A	N/A
E2	Roof	L	466	92	360	268	0.281	1.8	530	N/A	N/A
E3	Roof	L	466	92	282	190	0.281	1.8	376	7.18	12.36
E4	Roof	L	466	92	392	300	0.281	1.8	593	N/A	N/A
E5	Roof	L	466	92	394	302	0.281	1.8	597	N/A	N/A
E6	Roof	L	466	92	404	312	0.281	1.8	617	N/A	N/A
E7	Roof	L	466	92	382	290	0.281	1.8	573	N/A	N/A
F1	Roof	L	466	92	361	269	0.281	1.8	532	N/A	N/A
F2	Roof	L	466	92	285	193	0.281	1.8	382	N/A	N/A
F3	Roof	L	466	92	307	215	0.281	1.8	425	N/A	N/A
F4	Roof	L	466	92	378	286	0.281	1.8	565	N/A	N/A
F5	Roof	L	466	92	256	164	0.281	1.8	324	5.37	11.29
F6	Roof	L	466	92	315	223	0.281	1.8	441	N/A	N/A
F7	Roof	L	466	92	305	213	0.281	1.8	421	N/A	N/A

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 6
JN-6 Wall Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	1NWall	CB	409	37	237	200	0.281	1.8	395.41	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	-1.53
A2	1NWall	CB	409	37	224	187	0.281	1.8	369.71	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	2.73
A3	1NWall	CB	409	37	237	200	0.281	1.8	395.41	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A4	1NWall	CB	409	37	221	184	0.281	1.8	363.78	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
A5	1NWall	CB	409	37	246	209	0.281	1.8	413.21	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	2.73
A2	1EWall	CB	409	37	242	205	0.281	1.8	405.30	7	3	4	0	-4	0.228	1.8	-9.75	1.74	-0.47
A3	1EWall	CB	409	37	211	174	0.281	1.8	344.01	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	2.73
A4	1EWall	CB	409	37	204	167	0.281	1.8	330.17	7	3	4	4	0	0.228	1.8	0.00	-0.07	0.59
A1	1WWall	CB	409	37	241	204	0.281	1.8	403.32	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	4.87
A2	1WWall	CB	409	37	248	211	0.281	1.8	417.16	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	-1.53
A3	1WWall	CB	409	37	231	194	0.281	1.8	383.55	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A1	2NWall	CB	409	37	244	207	0.281	1.8	409.25	7	3	4	1	-3	0.228	1.8	-7.31	1.74	4.87
A2	2NWall	CB	409	37	307	270	0.281	1.8	533.81	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A3	2NWall	CB	409	37	273	236	0.281	1.8	466.59	7	3	4	0	-4	0.228	1.8	-9.75	1.74	-0.47
A4	2NWall	CB	409	37	244	207	0.281	1.8	409.25	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
A5	2NWall	CB	409	37	228	191	0.281	1.8	377.62	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-2.6
A1	2EWall	CB	409	37	248	211	0.281	1.8	417.16	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	-1.53
A2	2EWall	CB	409	37	241	204	0.281	1.8	403.32	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
A3	2EWall	CB	409	37	246	209	0.281	1.8	413.21	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	1.66
A4	2EWall	CB	409	37	224	187	0.281	1.8	369.71	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
A5	2EWall	CB	409	37	244	207	0.281	1.8	409.25	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	1.66
A6	2EWall	CB	409	37	240	203	0.281	1.8	401.34	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A3	2SWall	CB	409	37	217	180	0.281	1.8	355.87	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
A4	2SWall	CB	409	37	242	205	0.281	1.8	405.30	7	3	4	1	-3	0.228	1.8	-7.31	1.74	1.66
A5	2SWall	CB	409	37	220	183	0.281	1.8	361.80	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	-1.53
A1	2WWall	CB	409	37	211	174	0.281	1.8	344.01	7	3	4	0	-4	0.228	1.8	-9.75	1.74	3.8
A2	2WWall	CB	409	37	225	188	0.281	1.8	371.69	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
A3	2WWall	CB	409	37	256	219	0.281	1.8	432.98	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	2.73
A4	2WWall	CB	409	37	251	214	0.281	1.8	423.09	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	1.66
A5	2WWall	CB	409	37	215	178	0.281	1.8	351.92	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	7.01

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 7
JN-6 Ceiling Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Results in CPM: Alpha + Beta BKG Adjusted	Results in CPM: Static Measurements Gross Counts	Results in CPM: Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Results in CPM: Alpha BKG Ambient	Results in CPM: Alpha BKG Mean	Results in CPM: Static Measurements Gross Counts	Results in CPM: Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	Ceiling	L	342	92	292	200	0.281	1.8	395.41	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A2	Ceiling	L	342	92	298	206	0.281	1.8	407.28	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	1.66
A3	Ceiling	L	342	92	262	170	0.281	1.8	336.10	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
A4	Ceiling	L	342	92	254	162	0.281	1.8	320.28	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A5	Ceiling	L	342	92	289	197	0.281	1.8	389.48	7	2	4	5	1	0.228	1.8	2.44	-0.07	-1.53
A6	Ceiling	L	342	92	271	179	0.281	1.8	353.89	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A7	Ceiling	L	342	92	320	228	0.281	1.8	450.77	7	2	4	5	1	0.228	1.8	2.44	-0.07	0.59
B1	Ceiling	L	342	92	294	202	0.281	1.8	399.37	7	2	4	4	0	0.228	1.8	0.00	-0.07	-1.53
B2	Ceiling	L	342	92	257	165	0.281	1.8	326.22	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
B4	Ceiling	L	342	92	269	177	0.281	1.8	349.94	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
B5	Ceiling	L	342	92	256	164	0.281	1.8	324.24	7	2	4	4	0	0.228	1.8	0.00	-0.07	3.8
B6	Ceiling	L	342	92	239	147	0.281	1.8	290.63	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	2.73
B7	Ceiling	L	342	92	261	169	0.281	1.8	334.12	7	2	4	4	0	0.228	1.8	0.00	1.74	1.66
C1	Ceiling	L	342	92	256	164	0.281	1.8	324.24	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
C2	Ceiling	L	342	92	290	198	0.281	1.8	391.46	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	0.59
C4	Ceiling	L	342	92	255	163	0.281	1.8	322.26	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	3.8
C5	Ceiling	L	342	92	256	164	0.281	1.8	324.24	7	2	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
C6	Ceiling	L	342	92	218	126	0.281	1.8	249.11	7	2	4	3	-1	0.228	1.8	-2.44	-0.07	3.8
C7	Ceiling	L	342	92	241	149	0.281	1.8	294.58	7	2	4	1	-3	0.228	1.8	-7.31	1.74	-0.47
D1	Ceiling	L	342	92	212	120	0.281	1.8	237.25	7	2	4	3	-1	0.228	1.8	-2.44	-0.07	-0.47
D2	Ceiling	L	342	92	222	130	0.281	1.8	257.02	7	2	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
D4	Ceiling	L	342	92	220	128	0.281	1.8	253.06	7	2	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
D5	Ceiling	L	342	92	232	140	0.281	1.8	276.79	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	4.87
D6	Ceiling	L	342	92	219	127	0.281	1.8	251.09	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-1.53
D7	Ceiling	L	342	92	331	239	0.281	1.8	472.52	7	2	4	2	-2	0.228	1.8	-4.87	-0.07	-0.47
E1	Ceiling	L	342	92	220	128	0.281	1.8	253.06	7	2	4	1	-3	0.228	1.8	-7.31	1.74	8.08
E2	Ceiling	L	342	92	205	113	0.281	1.8	223.41	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
E3	Ceiling	L	342	92	194	102	0.281	1.8	201.66	7	2	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
E4	Ceiling	L	342	92	216	124	0.281	1.8	245.16	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	-2.6
E5	Ceiling	L	342	92	229	137	0.281	1.8	270.86	7	2	4	1	-3	0.228	1.8	-7.31	-0.07	4.87

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 8
JN-6 Exterior Wall Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	N.Wall	B	659	457	431	-26	0.281	1.8	-51.40	8	4	5	9	4	0.228	1.8	9.75	-0.07	0.59
A2	N.Wall	B	659	457	505	48	0.281	1.8	94.90	8	4	5	8	3	0.228	1.8	7.31	-0.07	2.73
A3	N.Wall	B	659	457	490	33	0.281	1.8	65.24	8	4	5	6	1	0.228	1.8	2.44	-0.07	4.87
A4	N.Wall	B	659	457	505	48	0.281	1.8	94.90	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	1.66
A5	N.Wall	B	659	457	573	116	0.281	1.8	229.34	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	0.59
A6	N.Wall	B	659	457	564	107	0.281	1.8	211.55	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	-0.47
A1	E.Wall	B	659	457	505	48	0.281	1.8	94.90	8	4	5	5	0	0.228	1.8	0.00	-0.07	-0.47
A2	E.Wall	B	659	457	455	-2	0.281	1.8	-3.95	8	4	5	5	0	0.228	1.8	0.00	-0.07	0.59
A3	E.Wall	B	659	457	501	44	0.281	1.8	86.99	8	4	5	7	2	0.228	1.8	4.87	-0.07	1.66
A4	E.Wall	B	659	457	532	75	0.281	1.8	148.28	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	4.87
A5	E.Wall	B	659	457	489	32	0.281	1.8	63.27	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	-0.47
A6	E.Wall	B	659	457	496	39	0.281	1.8	77.11	8	4	5	1	-4	0.228	1.8	-9.75	1.74	2.73
B1	E.Wall	B	659	457	537	80	0.281	1.8	158.17	8	4	5	5	0	0.228	1.8	0.00	-0.07	-1.53
A1	S.Wall	B	659	457	462	5	0.281	1.8	9.89	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	-1.53
A2	S.Wall	B	659	457	446	-11	0.281	1.8	-21.75	8	4	5	8	3	0.228	1.8	7.31	-0.07	-1.53
A3	S.Wall	B	659	457	494	37	0.281	1.8	73.15	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	1.66
A4	S.Wall	B	659	457	465	8	0.281	1.8	15.82	8	4	5	1	-4	0.228	1.8	-9.75	-0.07	2.73
A5	S.Wall	B	659	457	521	64	0.281	1.8	126.53	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	0.59
A6	S.Wall	B	659	457	530	73	0.281	1.8	144.33	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	-1.53
A2	W.Wall	B	659	457	474	17	0.281	1.8	33.61	8	4	5	6	1	0.228	1.8	2.44	-0.07	2.73
A3	W.Wall	B	659	457	506	49	0.281	1.8	96.88	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	-2.6
A4	W.Wall	B	659	457	505	48	0.281	1.8	94.90	8	4	5	4	-1	0.228	1.8	-2.44	-0.07	-0.47
A5	W.Wall	B	659	457	443	-14	0.281	1.8	-27.68	8	4	5	2	-3	0.228	1.8	-7.31	1.74	-1.53
A6	W.Wall	B	659	457	439	-18	0.281	1.8	-35.59	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	-0.47
A7	W.Wall	B	659	457	514	57	0.281	1.8	112.69	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	0.59
B5	W.Wall	B	659	457	444	-13	0.281	1.8	-25.70	8	4	5	1	-4	0.228	1.8	-9.75	1.74	2.73
B6	W.Wall	B	659	457	441	-16	0.281	1.8	-31.63	8	4	5	3	-2	0.228	1.8	-4.87	-0.07	1.66
B7	W.Wall	B	659	457	437	-20	0.281	1.8	-39.54	8	4	5	2	-3	0.228	1.8	-7.31	-0.07	-2.6
B1	S.Wall	B	659	457	451	-6	0.281	1.8	-11.86	8	4	5	6	1	0.228	1.8	2.44	-0.07	-1.53
B2	S.Wall	B	659	457	407	-50	0.281	1.8	-98.85	8	4	5	1	-4	0.228	1.8	-9.75	-0.07	0.59

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 9
JN-6 Floor Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Results in CPM: Alpha + Beta BKG Adjusted	Results in CPM: Static Measurements Gross Counts	Results in CPM: Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Results in CPM: Alpha BKG Ambient	Results in CPM: Alpha BKG Mean	Results in CPM: Static Measurements Gross Counts	Results in CPM: Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	Floor	L	342	92	285	193	0.281	1.8	381.57	7	4	4	0	-4	0.228	1.8	-9.75	1.74	3.8
A2	Floor	L	342	92	266	174	0.281	1.8	344.01	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
A3	Floor	L	342	92	293	201	0.281	1.8	397.39	7	4	4	1	-3	0.228	1.8	-7.31	-0.07	0.59
A4	Floor	L	342	92	276	184	0.281	1.8	363.78	7	4	4	2	-2	0.228	1.8	-4.87	1.74	1.66
A5	Floor	L	342	92	277	185	0.281	1.8	365.76	7	4	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
A6	Floor	L	342	92	268	176	0.281	1.8	347.96	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
A7	Floor	L	342	92	270	178	0.281	1.8	351.92	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
B1	Floor	L	342	92	293	201	0.281	1.8	397.39	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	0.59
B2	Floor	L	342	92	267	175	0.281	1.8	345.99	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	1.66
B4	Floor	L	342	92	250	158	0.281	1.8	312.38	7	4	4	0	-4	0.228	1.8	-9.75	1.74	1.66
B5	Floor	L	342	92	263	171	0.281	1.8	338.08	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
B6	Floor	L	342	92	295	203	0.281	1.8	401.34	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
B7	Floor	L	342	92	236	144	0.281	1.8	284.70	7	4	4	1	-3	0.228	1.8	-7.31	1.74	2.73
C1	Floor	L	342	92	238	146	0.281	1.8	288.65	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	3.8
C2	Floor	L	342	92	233	141	0.281	1.8	278.77	7	4	4	13	9	0.228	1.8	21.93	1.74	3.8
C4	Floor	L	342	92	250	158	0.281	1.8	312.38	7	4	4	15	11	0.228	1.8	26.80	-0.07	0.59
C5	Floor	L	342	92	274	182	0.281	1.8	359.83	7	4	4	8	4	0.228	1.8	9.75	-0.07	-1.53
C6	Floor	L	342	92	256	164	0.281	1.8	324.24	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	-1.53
C7	Floor	L	342	92	231	139	0.281	1.8	274.81	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
D1	Floor	L	342	92	232	140	0.281	1.8	276.79	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	-0.47
D2	Floor	L	342	92	226	134	0.281	1.8	264.93	7	4	4	0	-4	0.228	1.8	-9.75	-0.07	4.87
D4	Floor	L	342	92	204	112	0.281	1.8	221.43	7	4	4	4	0	0.228	1.8	0.00	-0.07	0.59
D5	Floor	L	342	92	232	140	0.281	1.8	276.79	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	-0.47
D6	Floor	L	342	92	206	114	0.281	1.8	225.39	7	4	4	3	-1	0.228	1.8	-2.44	-0.07	2.73
D7	Floor	L	342	92	229	137	0.281	1.8	270.86	7	4	4	4	0	0.228	1.8	0.00	-0.07	-2.6
E1	Floor	L	342	92	216	124	0.281	1.8	245.16	7	4	4	2	-2	0.228	1.8	-4.87	-0.07	0.59
E2	Floor	L	342	92	260	168	0.281	1.8	332.15	7	4	4	4	0	0.228	1.8	0.00	-0.07	0.59
E4	Floor	L	342	92	296	204	0.281	1.8	403.32	7	4	4	3	-1	0.228	1.8	-2.44	1.74	2.73
E5	Floor	L	342	92	305	213	0.281	1.8	421.12	7	4	4	4	0	0.228	1.8	0.00	-0.07	2.73
E6	Floor	L	342	92	287	195	0.281	1.8	385.53	7	4	4	2	-2	0.228	1.8	-4.87	-0.07	1.66

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 10
JN-6 Roof Population Survey

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Adjusted	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Static Measurements Gross Counts	Static Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta
A1	Roof	L	342	92	310	218	0.281	1.8	431.00	7	3	4	10	6	0.228	1.8	14.62	1.74	1.66
A2	Roof	L	342	92	370	278	0.281	1.8	549.62	7	3	4	5	1	0.228	1.8	2.44	3.55	12.36
A3	Roof	L	342	92	367	275	0.281	1.8	543.69	7	3	4	8	4	0.228	1.8	9.75	1.74	0.59
A4	Roof	L	342	92	336	244	0.281	1.8	482.40	7	3	4	4	0	0.228	1.8	0.00	3.55	5.94
A5	Roof	L	342	92	356	264	0.281	1.8	521.95	7	3	4	4	0	0.228	1.8	0.00	-0.07	3.8
A6	Roof	L	342	92	331	239	0.281	1.8	472.52	7	3	4	6	2	0.228	1.8	4.87	1.74	2.73
A7	Roof	L	342	92	367	275	0.281	1.8	543.69	7	3	4	3	-1	0.228	1.8	-2.44	-0.07	4.87
B1	Roof	L	342	92	341	249	0.281	1.8	492.29	7	3	4	4	0	0.228	1.8	0.00	3.55	8.08
B2	Roof	L	342	92	302	210	0.281	1.8	415.18	7	3	4	3	-1	0.228	1.8	-2.44	1.74	5.94
B3	Roof	L	342	92	311	219	0.281	1.8	432.98	7	3	4	2	-2	0.228	1.8	-4.87	-0.07	1.66
B4	Roof	L	342	92	276	184	0.281	1.8	363.78	7	3	4	1	-3	0.228	1.8	-7.31	1.74	-0.47
B5	Roof	L	342	92	282	190	0.281	1.8	375.64	7	3	4	3	-1	0.228	1.8	-2.44	1.74	0.59
B6	Roof	L	342	92	308	216	0.281	1.8	427.05	7	3	4	3	-1	0.228	1.8	-2.44	5.37	4.87
B7	Roof	L	342	92	267	175	0.281	1.8	345.99	7	3	4	2	-2	0.228	1.8	-4.87	1.74	7.01
C1	Roof	L	342	92	306	214	0.281	1.8	423.09	7	3	4	1	-3	0.228	1.8	-7.31	1.74	0.59
C2	Roof	L	342	92	275	183	0.281	1.8	361.80	7	3	4	2	-2	0.228	1.8	-4.87	1.74	0.59
C3	Roof	L	342	92	291	199	0.281	1.8	393.44	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	4.87
C4	Roof	L	342	92	270	178	0.281	1.8	351.92	7	3	4	2	-2	0.228	1.8	-4.87	1.74	3.8
C5	Roof	L	342	92	311	219	0.281	1.8	432.98	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	1.66
C6	Roof	L	342	92	274	182	0.281	1.8	359.83	7	3	4	3	-1	0.228	1.8	-2.44	3.55	4.87
C7	Roof	L	342	92	321	229	0.281	1.8	452.75	7	3	4	1	-3	0.228	1.8	-7.31	3.55	10.22
D1	Roof	L	342	92	285	193	0.281	1.8	381.57	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	-0.47
D2	Roof	L	342	92	313	221	0.281	1.8	436.93	7	3	4	0	-4	0.228	1.8	-9.75	1.74	-0.47
D3	Roof	L	342	92	280	188	0.281	1.8	371.69	7	3	4	1	-3	0.228	1.8	-7.31	5.37	5.94
D4	Roof	L	342	92	264	172	0.281	1.8	340.06	7	3	4	0	-4	0.228	1.8	-9.75	-0.07	0.59
D5	Roof	L	342	92	209	117	0.281	1.8	231.32	7	3	4	0	-4	0.228	1.8	-9.75	1.74	0.59
D6	Roof	L	342	92	279	187	0.281	1.8	369.71	7	3	4	1	-3	0.228	1.8	-7.31	-0.07	1.66
D7	Roof	L	342	92	291	199	0.281	1.8	393.44	7	3	4	3	-1	0.228	1.8	-2.44	1.74	11.29
E1	Roof	L	342	92	298	206	0.281	1.8	407.28	7	3	4	2	-2	0.228	1.8	-4.87	1.74	1.66
E2	Roof	L	342	92	299	207	0.281	1.8	409.25	7	3	4	0	-4	0.228	1.8	-9.75	1.74	1.66

B - Brick
CB - Concrete Block
CF - Concrete Floor
L - Low Natural Material

Table 11

Corrected Background Reference Values for the Various Construction Material Types

Component Type	Material Mean[1] CPM	Mean Ambient[2] CPM	Delta[3] (Adjusted) CPM
Component			
Concrete Block	400	363	37
Concrete Forms	452	361	91
Concrete Floor	544	357	187
LoNaM	384	292	92
Brick	729	272	457

1 The material mean was derived for each of the listed component types specified in procedure SC-OP-007, "Baseline Reference Values for Facility Radiological Characterization Surveys" The value used is the result of an average of 40 static measurements, of each material type

2 The ambient mean values were derived in accord with standard operating procedures. The measurement is the value derived by placing the detector, face up in open air.

3 The Delta CPM was derived by subtracting the material mean value from the ambient value

Note: These calculated adjustments are intended for use in the FSS Report of JN-6, and not intended for general application in the FSS process of the Columbus Closure Project

Attachment A

Minimum Detectable Activity Calculations for a Ludlum Model 43-20 Detector and Eberline ESP-2 Meter

The minimum detectable activity (MDA) for scanning a point source with instrument progression rate of 5 centimeters per second (cm/sec) is calculated using the following method:

Given:

Width of detector	=	10 cm
Area of detector	=	180 cm^2

Time probe is above point (T) = $\frac{10cm}{5cm/\sec} * \frac{1\min}{60\sec} = 0.033\min$

Background (worst case brick) = 729 counts per minute (cpm)

C_b	=	scanning background = 729 cpm x 0.033 min = 24.1 counts (c)
S_b	=	standard deviation of C_b = $\sqrt{C_b}$ = 4.91
Eff	=	efficiency of detector = 0.28 counts per disintegration (c/d)

$$MDA = \frac{3 + (4.65 * S_b)}{Eff * T} = \frac{3 + (4.65 * 4.91)}{(0.28 * 0.033)} = 2800 \text{ disintegrations per minute}$$

For a wide area source, the MDA would approach the static 1 minute count MDA:

T	=	1 minute
S_b	=	$\sqrt{background} = \sqrt{729} = 27$ cpm

$$MDA + \frac{3 + (4.65 * 27)}{(0.28 * 1)} = 459 \text{ dpm}/100 \text{ cm}^2$$