

**RADIOLOGICAL SURVEY OF
BUILDING ROOFS**

JULY 17, 2000

**WESTINGHOUSE ELECTRIC CORPORATION
BLAIRSVILLE, PA**

REPORT # 004

**RADIOLOGICAL SURVEY OF
BUILDING ROOFS**

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RADIOLOGICAL SURVEY OF BUILDING ROOFS

Purpose

The Westinghouse Blairsville Site utilized nuclear materials during the period of the mid to late 1950's to the early part of the 1960's. Work was performed both under licenses with the atomic Energy Commission and for the Bettis Atomic Power Laboratory. Although all work ceased during the 1960's, subsequent radiological surveys and investigations, starting in 1993, established that some residual radioactivity, primarily in underground piping and subsurface soil contamination, existed on the site. During the period of 1993 through the present, additional remediation work and radiological surveys have been conducted to establish that the site can be released for unrestricted use. This series of reports documents the results of the final status radiological surveys subsequent to the various remediation efforts.

Scope

This report compiles information on the roof surveys performed on buildings 1 and 4 at the Blairsville site. Included in the report is the survey data sheets with the conversion of the results into units comparable with the acceptance criteria, statistical analysis of the survey data in order to determine if the radiological acceptance criteria have been met at the desired degree of confidence, a compiled statistics table, and data trend visualization plots. Report #006 provides the general information relative to the final radiological surveys of buildings under this program. Refer to that report for the following information:

- 1) Site Description
- 2) Radiological Acceptance Criteria
- 3) Survey Classification System
- 4) Classification of Building Area
- 5) Selection of Survey Instruments and Instrument Characterization
- 6) System for Identification of Survey Point Locations
- 7) Statistical Analysis of Survey Results
- 8) Survey Protocol

Much of the general information for the building surveys is applicable to the roof surveys. The following discussion provides specific information related to the roof surveys.

RADIOLOGICAL SURVEY OF BUILDING ROOFS

Discussion

Appendix A provides a listing of all of the survey numbers, sections, units, and sub-units that were analyzed. Survey section diagrams of buildings 1 and 4 roofs are included for location referencing also. Appendix B presents the summary table of the compiled statistical analysis of the radiological survey data. Appendices C and D present a graphical depiction of the radiological survey results for Buildings 1 and 4 respectively. These graphs include the survey results for fixed alpha, fixed beta, and the beta scan (maximum and average) only. Other survey measurements included in Appendix B are not presented graphically.

Only the roofs of Buildings 1 and 4 were included in the roof surveys because only Building 1 and section 4-18-1 of Building 4 existed during the period of use of licensed materials. The other buildings were added at later dates and have no recorded use of radioactive material as is further evidenced by the results of surveys conducted within all buildings.

Appendix E presents the graphical results of the radiological survey of the accessible internal surfaces of the roof drains and vents. Because the instrument used was not calibrated to convert the meter output into a measurement consistent with a release criteria (i.e. DPM/100cm²) the data results are qualitative in nature. The only comparison that can be appropriately made is the comparison that can be made against the normal instrument background, which ranged from 20 to 40 CPM. The graphs of Appendix E have the instrument background subtracted.

Appendix F presents all of the radiological survey data converted to the appropriated units, if required, for comparison against the applicable criteria. See Report #006 for the appropriate survey sheets by serial number, to review the "as recorded" survey data.

Conclusions

Based on the radiological surveys of the roofs for Buildings 1 and 4, these roofs meet all applicable criteria for release for unrestricted use.

APPENDIX A
ROOF SURVEY LOG
AND ROOF SECTIONING MAP

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Roof Survey Log

Survey Serial Number	Survey Date	Section	Unit	Sub- Unit	Number of Survey Points	Type	Classification	Total Unit Size (sq. ft.)	Total Unit Size (sq. M.)
01-419	8/13/95	1	51	1	30	ROOFTOP	1	18880	1754.5
01-420	8/17/95	1	52	1	30	ROOFTOP	1	64426	6045
01-421	8/18/95	1	53	1	30	ROOFTOP	1	64426	6045
01-422	8/19/95	1	54	1	30	ROOFTOP	1	30600	2846
01-427	8/29/95	1	55	1	30	ROOF	1	15680	1421
01-428	8/29/95	1	56	2	30	ROOF	1	5040	468.4
01-429	8/30/95	1	56	1	30	ROOF	1	5040	468.4
04-019	8/30/95	4	18	1	30	ROOF	1	12800	189.6
ALL	8/--/95	All	All	All	42	DRAINS & VENTS	1	N/A	N/A

MAIN BUILDING ROOF

- SKYLIGHT
- + ROOF DRAIN
- EXHAUST STACKS
- ROOF EXHAUST FAN
- VENT
- ANTENNA MOUNT
- RELIEF VENT
- FRESH AIR INTAKE

1-56-2

1-55-1

1-54-1

1-53-1

1-56-1

1-52-1

1-51-1

WESTINGHOUSE PROPRIETARY DATA Not to be used for other than the purpose for which it was designed. This drawing is the property of Westinghouse Electric Corporation and is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Westinghouse Electric Corporation.		NO. OF PAGES 2 OF 2	DATE 10/1/88	DRAWN BY J. L. L.	CHECKED BY J. L. L.
PROJECT MAIN BUILDING		DRAWING NO. 647J483			
SHEET NO. 1 OF 1		SCALE AS SHOWN			

Westinghouse Electric Corporation
SPECIALTY KEELS PLANT BLANESVILLE, PA. USA

MAIN BUILDING
ROOF PLAN (LAYOUT)

DATE
10/1/88
BY
J. L. L.
CHECKED BY
J. L. L.

DIE SHOP ROOF

4-18-1

4-19-1

APPENDIX B

ROOF COMPILED STATISTICAL ANALYSIS

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Roof Compiled Statistics

Sort #	Location Code	Number of Survey Points	Minimum Value	Maximum Value	Average Value	Standard Deviation	Radiological Acceptance Criteria	Units
Gross Gamma (at 1 meter above surface)								
1	1:51	30	5	8	6.20	0.66	15	(@1m) microR/hr
1	1:52	30	5	9	5.87	0.97	15	(@1m) microR/hr
1	1:53	30	4	6	4.97	0.67	15	(@1m) microR/hr
1	1:54	30	4	6	5.00	0.64	15	(@1m) microR/hr
1	1:55	30	4	7	5.63	0.67	15	(@1m) microR/hr
1	1:56	30	5	8	6.60	0.89	15	(@1m) microR/hr
1	4:18	30	5	8	6.33	0.80	15	(@1m) microR/hr
Gross Beta/ Gamma (on contact with surface)								
2	1:51	30	0.007	0.064	0.017	0.013	0.20	mR/hr
2	1:52	30	0.010	0.025	0.014	0.005	0.20	mR/hr
2	1:53	30	0.010	0.020	0.014	0.004	0.20	mR/hr
2	1:54	30	0.010	0.025	0.015	0.005	0.20	mR/hr
2	1:55	30	0.007	0.019	0.013	0.003	0.20	mR/hr
2	1:56	30	0.007	0.018	0.013	0.003	0.20	mR/hr
2	4:18	30	0.005	0.016	0.010	0.003	0.20	mR/hr
Alpha DPM (fixed measurement at survey point)								
3	1:51	30	23.58	99.06	58.81	20.08	5000	DPM/100cm2
3	1:52	30	9.43	89.62	44.18	20.15	5000	DPM/100cm2
3	1:53	30	-9.43	108.49	43.24	22.37	5000	DPM/100cm2
3	1:54	30	23.58	117.92	59.43	22.46	5000	DPM/100cm2
3	1:55	30	33.02	226.42	114.62	49.35	5000	DPM/100cm2
3	1:56	30	0.00	113.21	45.13	32.13	5000	DPM/100cm2
3	4:18	30	-9.43	66.04	34.91	21.26	5000	DPM/100cm2
Beta DPM (fixed measurement at survey point)								
4	1:51	30	-124.28	190.75	23.22	85.46	5000	DPM/100cm2
4	1:52	30	-37.57	320.81	94.89	89.66	5000	DPM/100cm2
4	1:53	30	-26.01	283.24	118.02	78.27	5000	DPM/100cm2
4	1:54	30	-40.46	289.02	83.82	89.43	5000	DPM/100cm2
4	1:55	30	0.00	459.54	234.10	116.95	5000	DPM/100cm2
4	1:56	30	-63.58	219.65	68.88	63.77	5000	DPM/100cm2
4	4:18	30	43.35	277.46	148.07	58.50	5000	DPM/100cm2
Beta Scan Max (maximum of scan near survey point)								
5	1:51	30	-37.57	1294.80	287.67	259.01	15000	DPM/100cm2
5	1:52	30	106.94	708.09	286.80	114.77	15000	DPM/100cm2
5	1:53	30	135.84	549.13	317.92	106.05	15000	DPM/100cm2
5	1:54	30	144.51	528.90	324.18	100.90	15000	DPM/100cm2
5	1:55	30	309.25	658.96	473.22	111.55	15000	DPM/100cm2
5	1:56	30	101.16	627.17	318.98	143.99	15000	DPM/100cm2
5	4:18	30	208.09	552.02	363.78	90.71	15000	DPM/100cm2
Beta Scan Avg. (average of scan near survey point)								
6	1:51	30	-141.62	205.20	-14.45	83.01	5000	DPM/100cm2
6	1:52	30	-8.67	164.74	68.40	57.47	5000	DPM/100cm2
6	1:53	30	-11.56	219.65	110.79	66.46	5000	DPM/100cm2
6	1:54	30	-40.46	132.95	55.88	42.49	5000	DPM/100cm2
6	1:55	30	-60.69	372.83	180.15	105.26	5000	DPM/100cm2
6	1:56	30	-86.71	297.69	46.53	94.24	5000	DPM/100cm2
6	4:18	30	-14.45	216.76	127.17	67.18	5000	DPM/100cm2
Removable Alpha (alpha smear near survey point)								
7	1:51	30	-0.99	3.43	-0.30	1.14	1000	DPM/100cm2
7	1:52	30	-0.99	1.96	-0.20	1.08	1000	DPM/100cm2
7	1:53	30	-0.99	7.85	0.39	1.97	1000	DPM/100cm2
7	1:54	30	-0.99	1.96	-0.45	0.82	1000	DPM/100cm2

Roof Compiled Statistics

7	1:55	30	-1.61	5.77	0.06	2.00	1000	DPM/100cm2
7	1:56	30	-1.61	2.82	-0.38	1.51	1000	DPM/100cm2
7	4:18	30	-1.61	5.77	0.11	1.55	1000	DPM/100cm2

Removable Beta (beta smear near survey point)

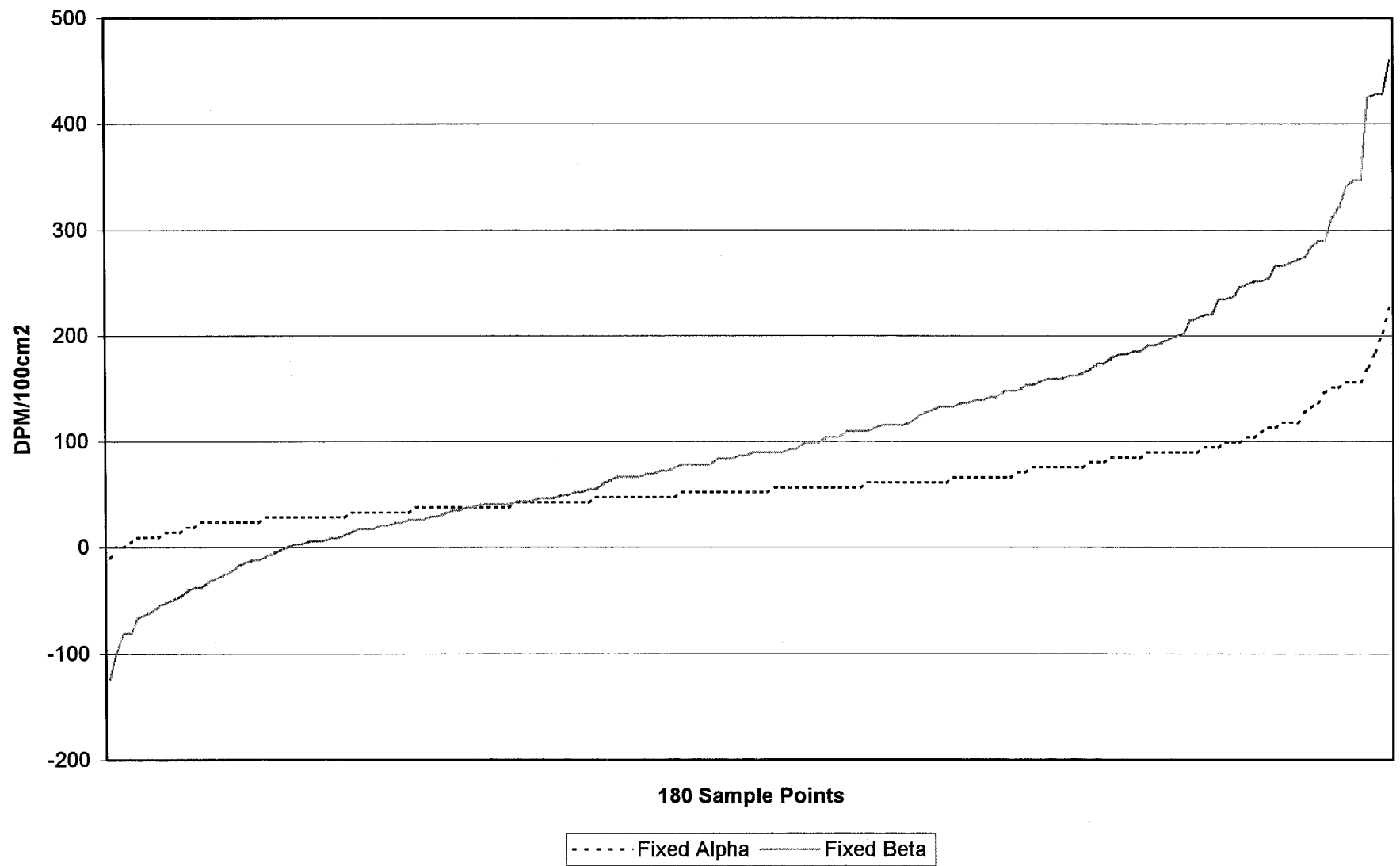
8	1:51	30	-3.13	7.50	0.90	2.99	1000	DPM/100cm2
8	1:52	30	-3.13	7.50	1.65	2.56	1000	DPM/100cm2
8	1:53	30	-3.13	8.83	0.54	2.79	1000	DPM/100cm2
8	1:54	30	-4.46	11.49	-0.08	3.01	1000	DPM/100cm2
8	1:55	30	-4.55	8.82	-0.27	3.01	1000	DPM/100cm2
8	1:56	30	-5.88	6.15	-1.03	2.86	1000	DPM/100cm2
8	4:18	30	-4.55	7.49	0.36	3.15	1000	DPM/100cm2

APPENDIX C

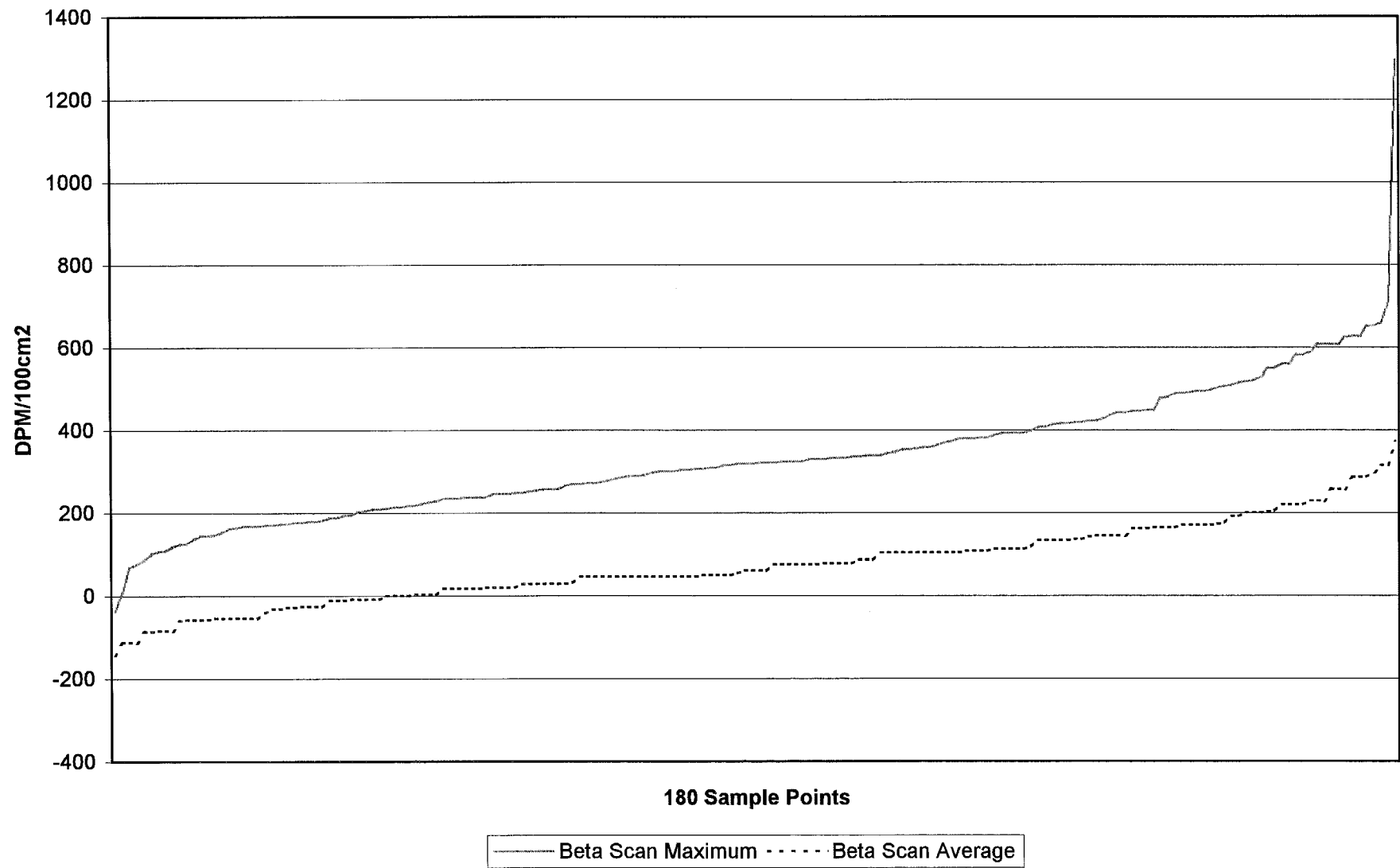
BUILDING 1 DATA TRENDS

REPORT #004

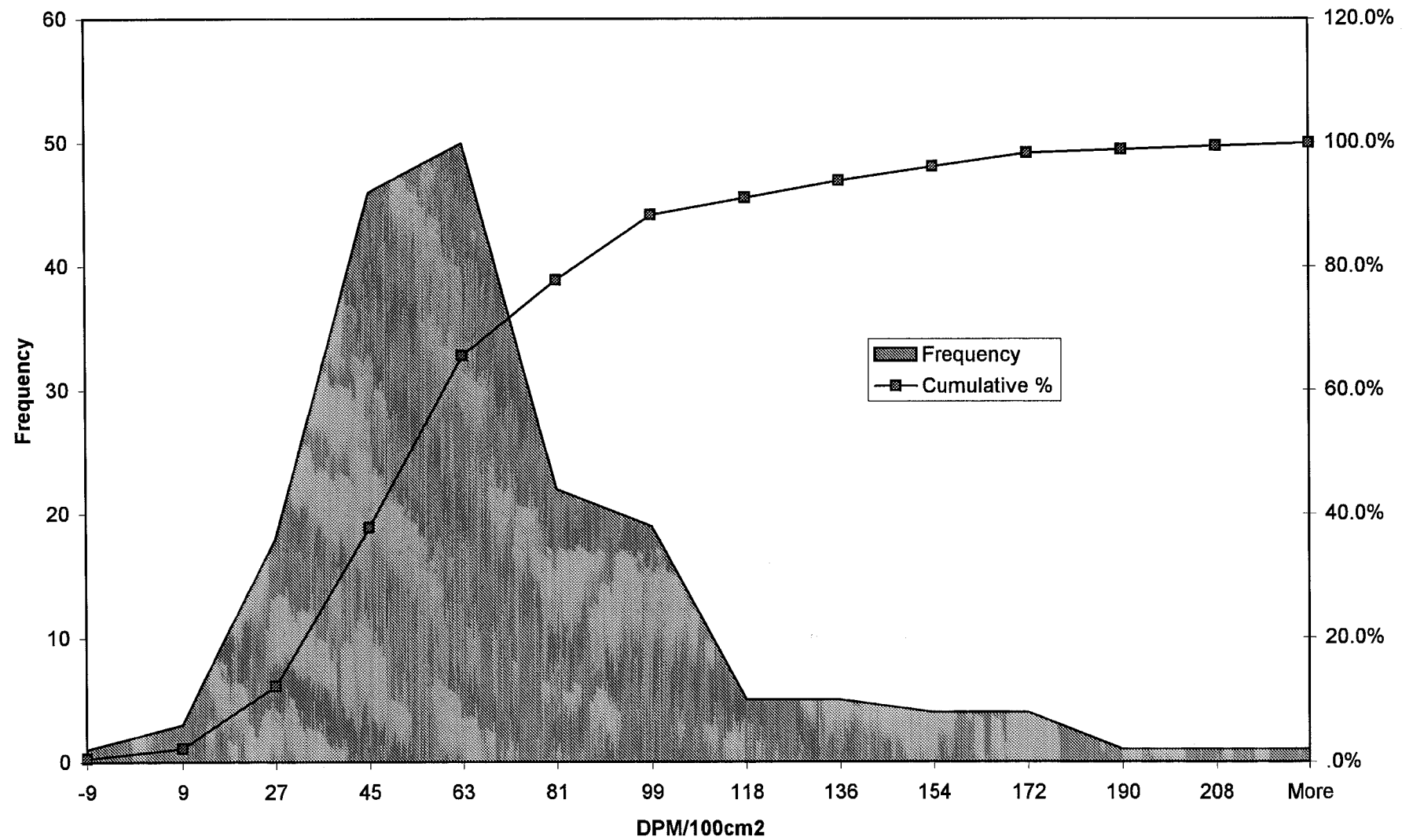
Roof Unit 1-All Data Trends



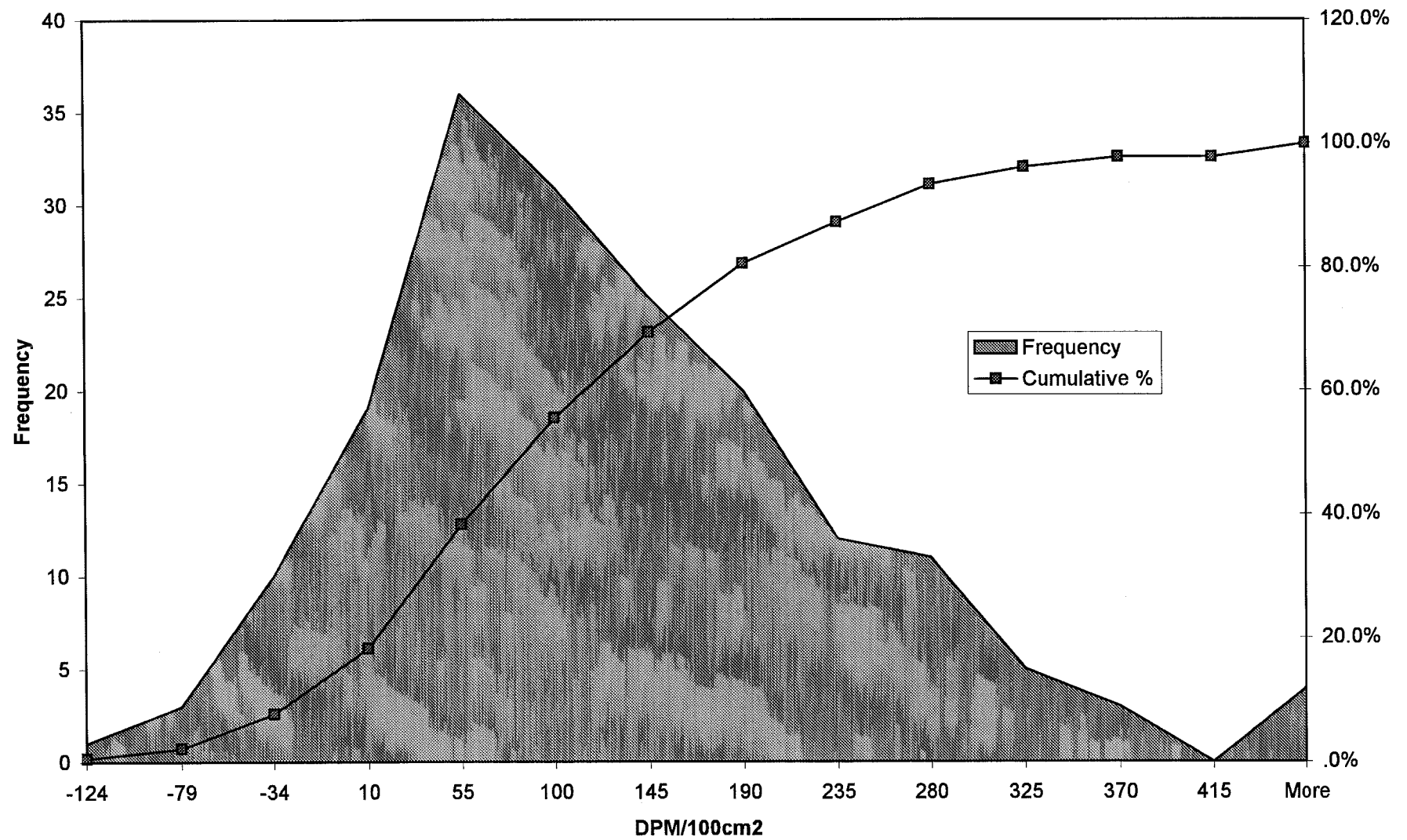
Roof Unit 1-All Data Trends



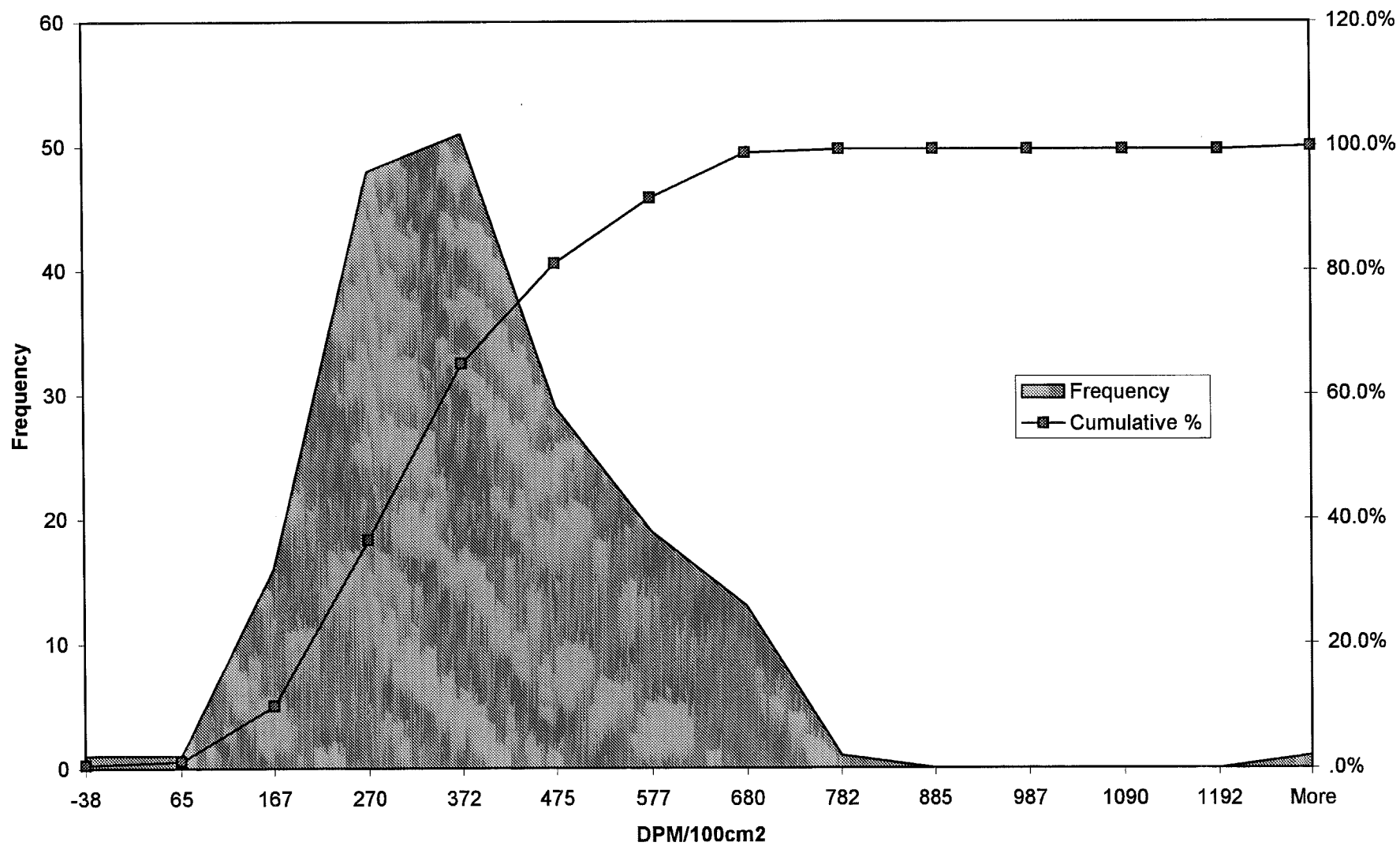
Roof Unit 1-All Fixed Alpha Histogram



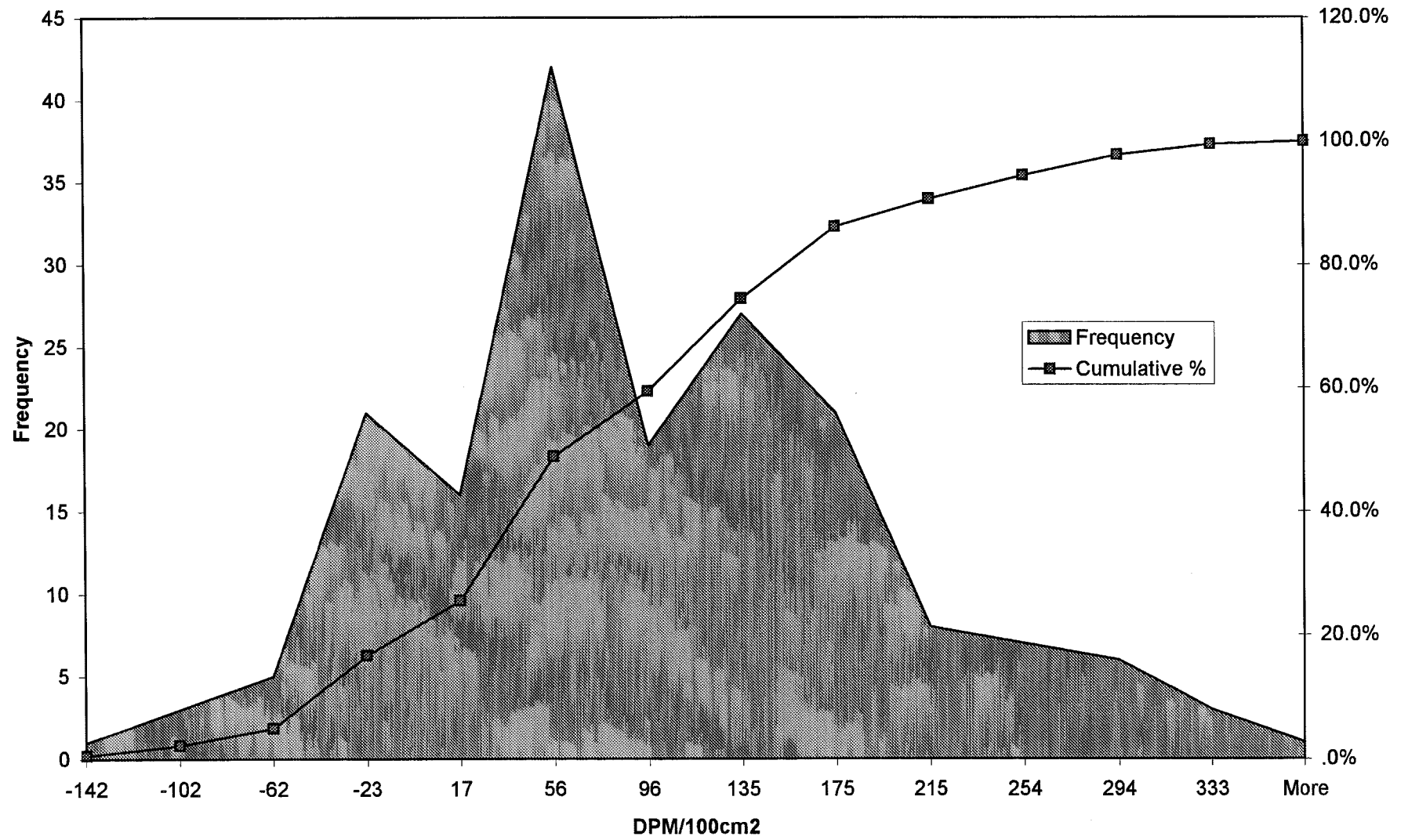
Roof Unit 1-All Fixed Beta Histogram



Roof Unit 1-All Beta Scan Maximum Histogram



Roof Unit 1-All Beta Scan Average Histogram

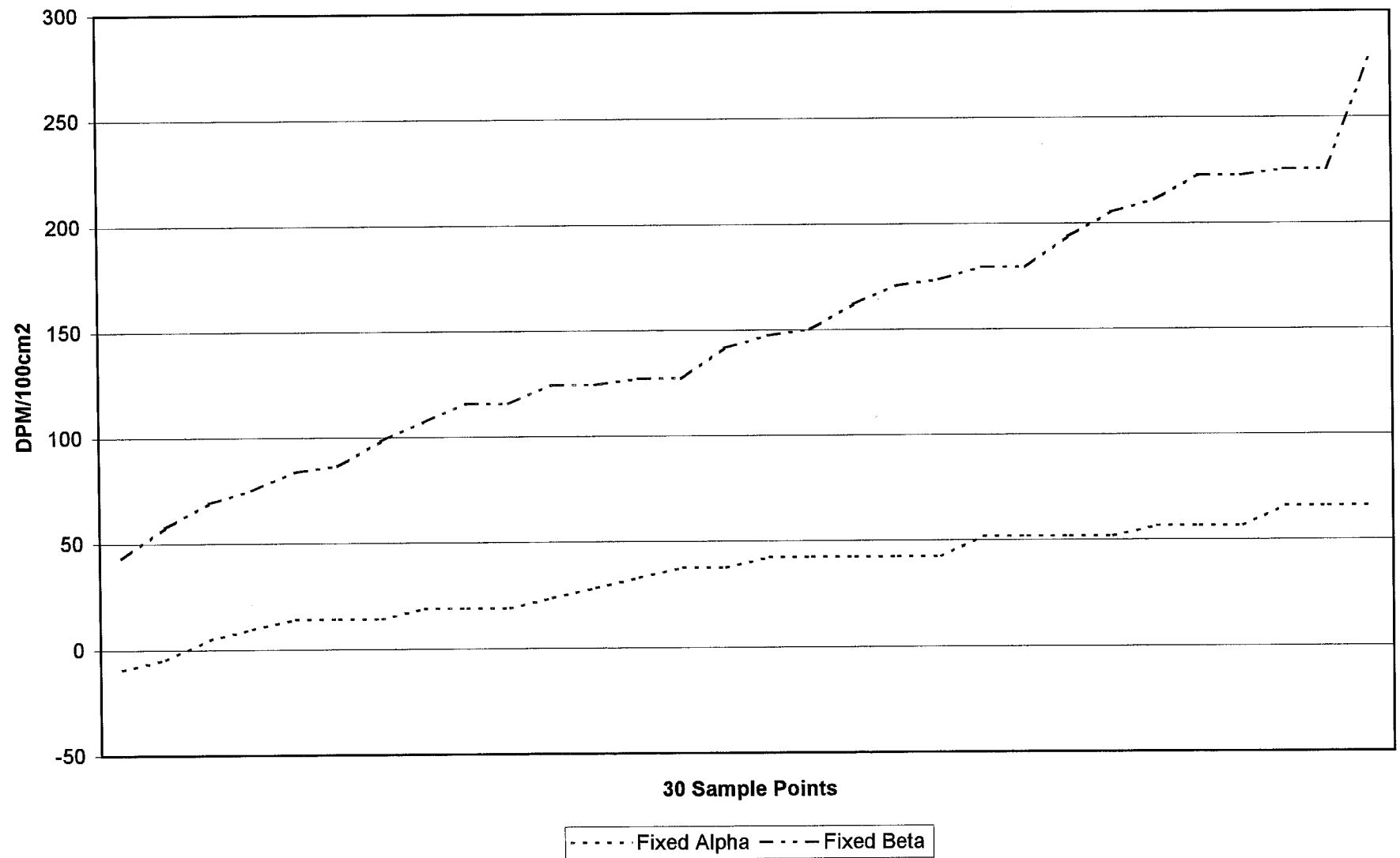


APPENDIX D

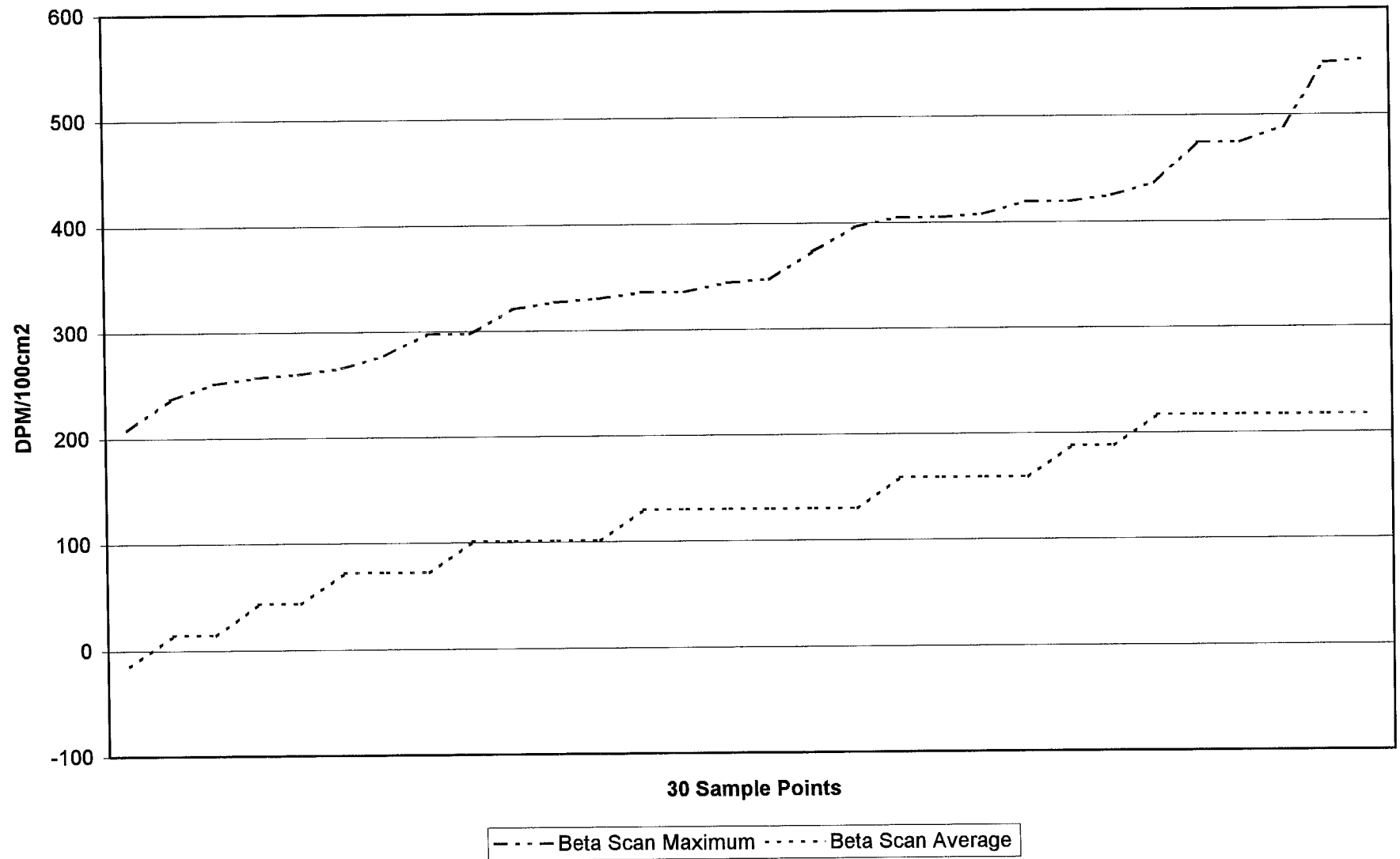
BUILDING 4 DATA TRENDS

REPORT #004

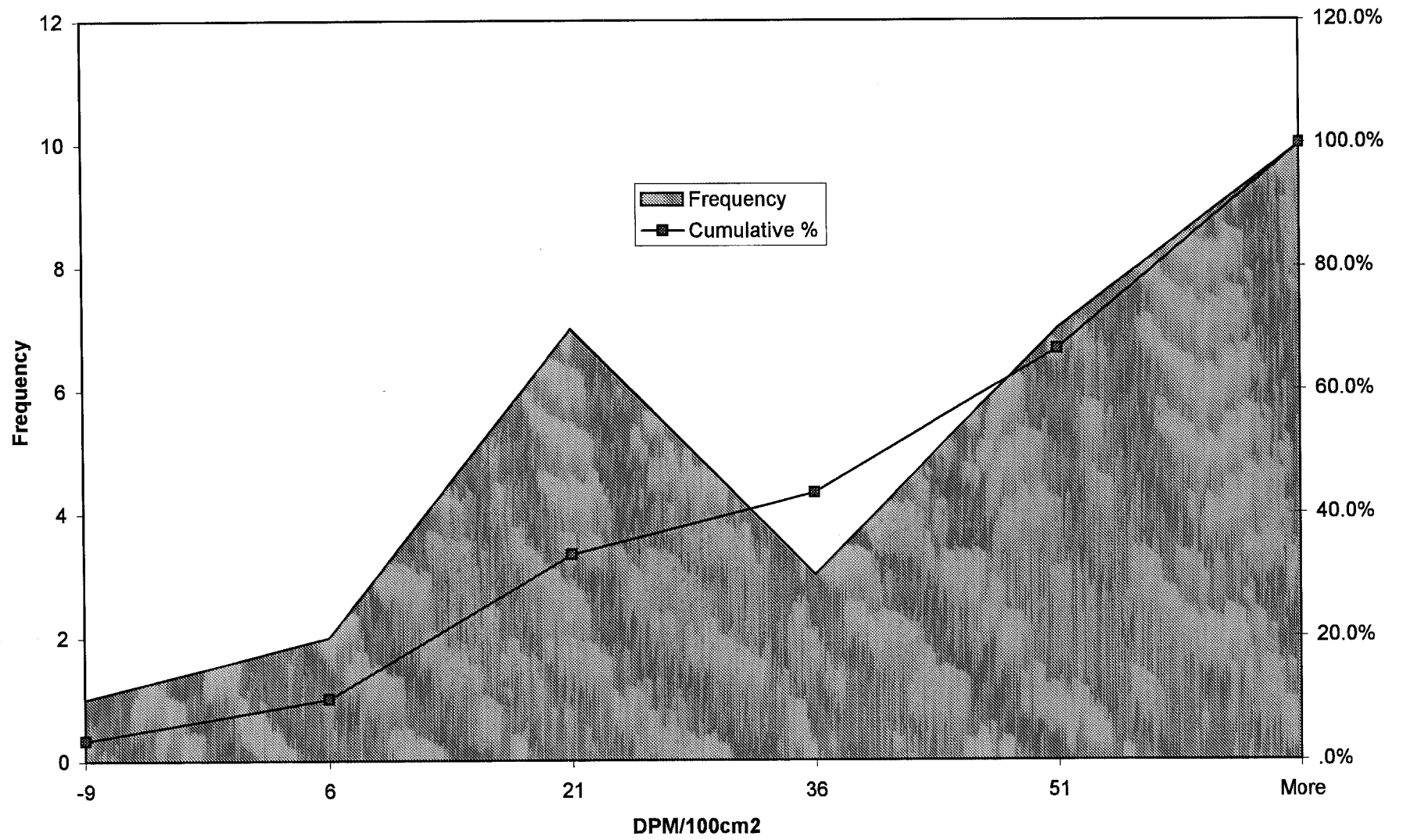
Roof Unit 4-18 Data Trends



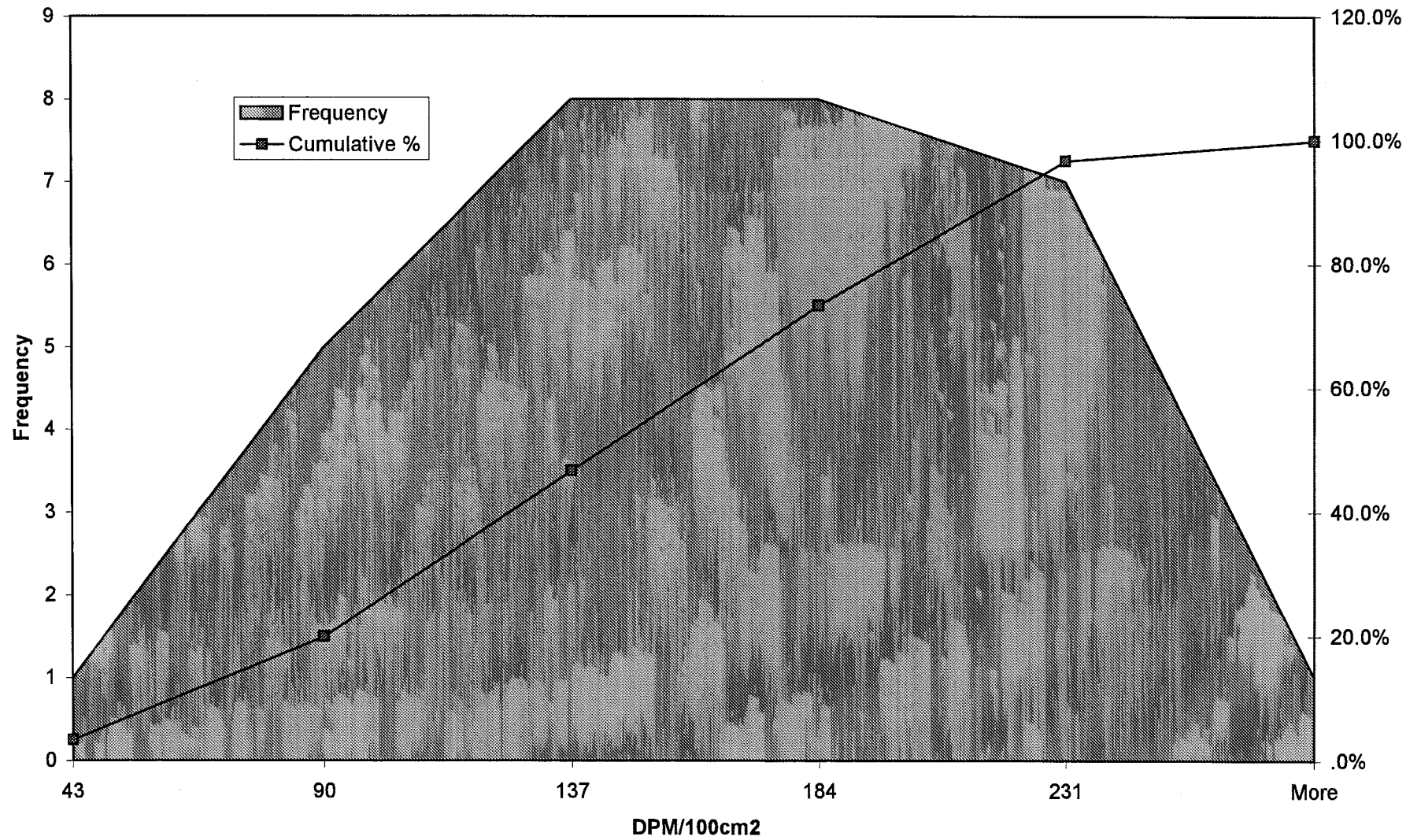
Roof Unit 4-18 Data Trends



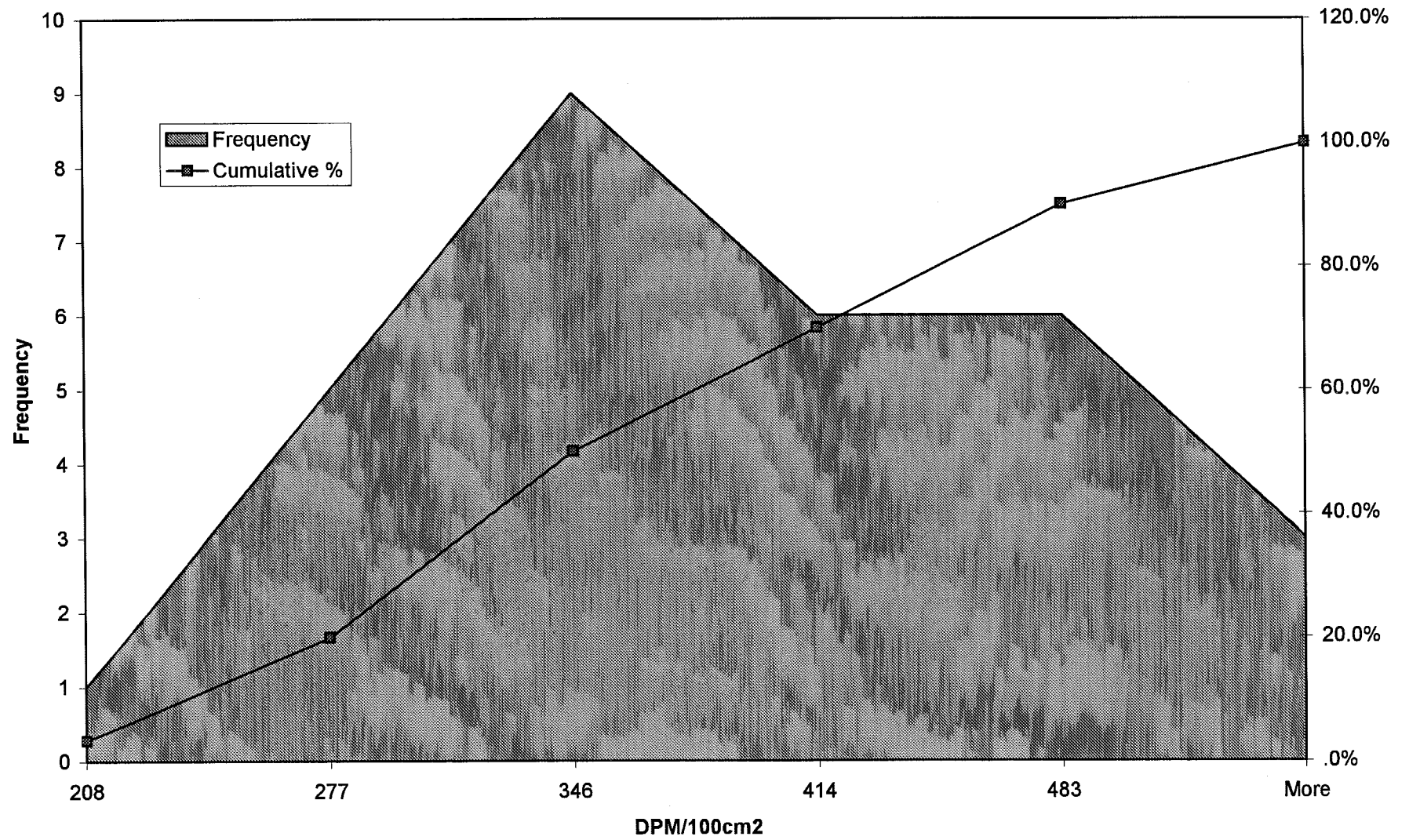
Roof Unit 4-18 Fixed Alpha Histogram



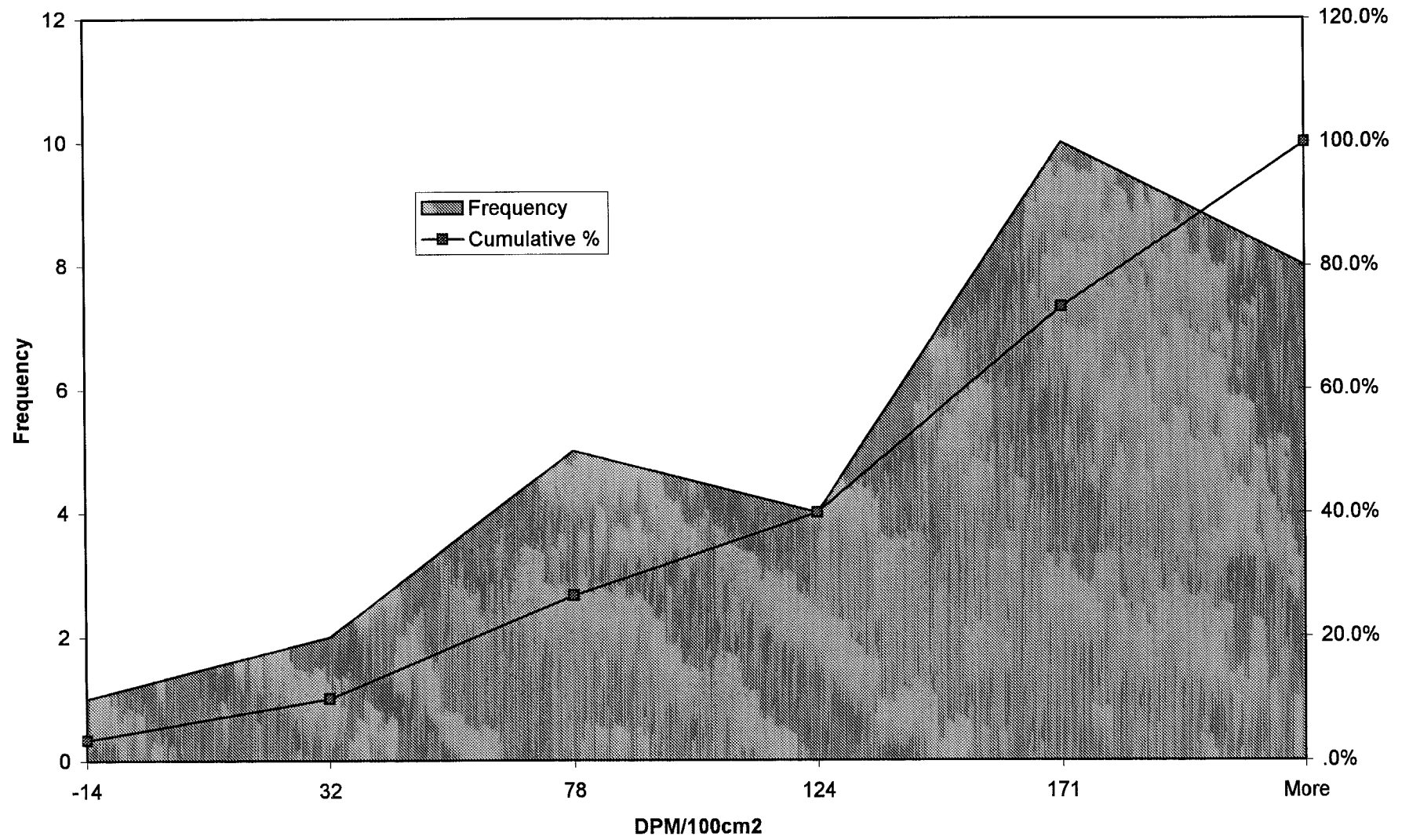
Roof Unit 4-18 Fixed Beta Histogram



Roof Unit 4-18 Beta Scan Maximum Histogram



Roof Unit 4-18 Beta Scan Average Histogram



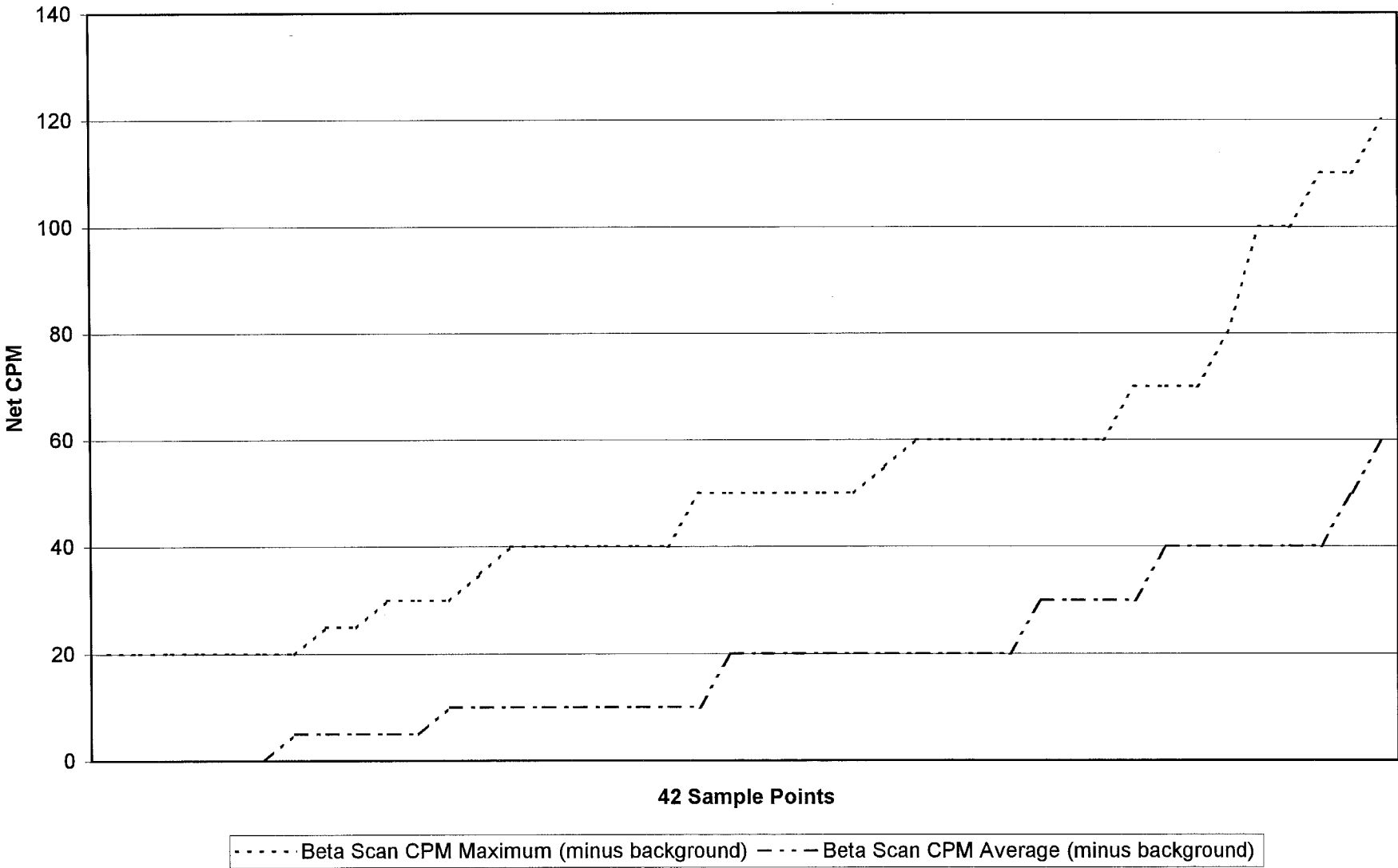
APPENDIX E

ROOF DRAIN AND VENT INTERNALS

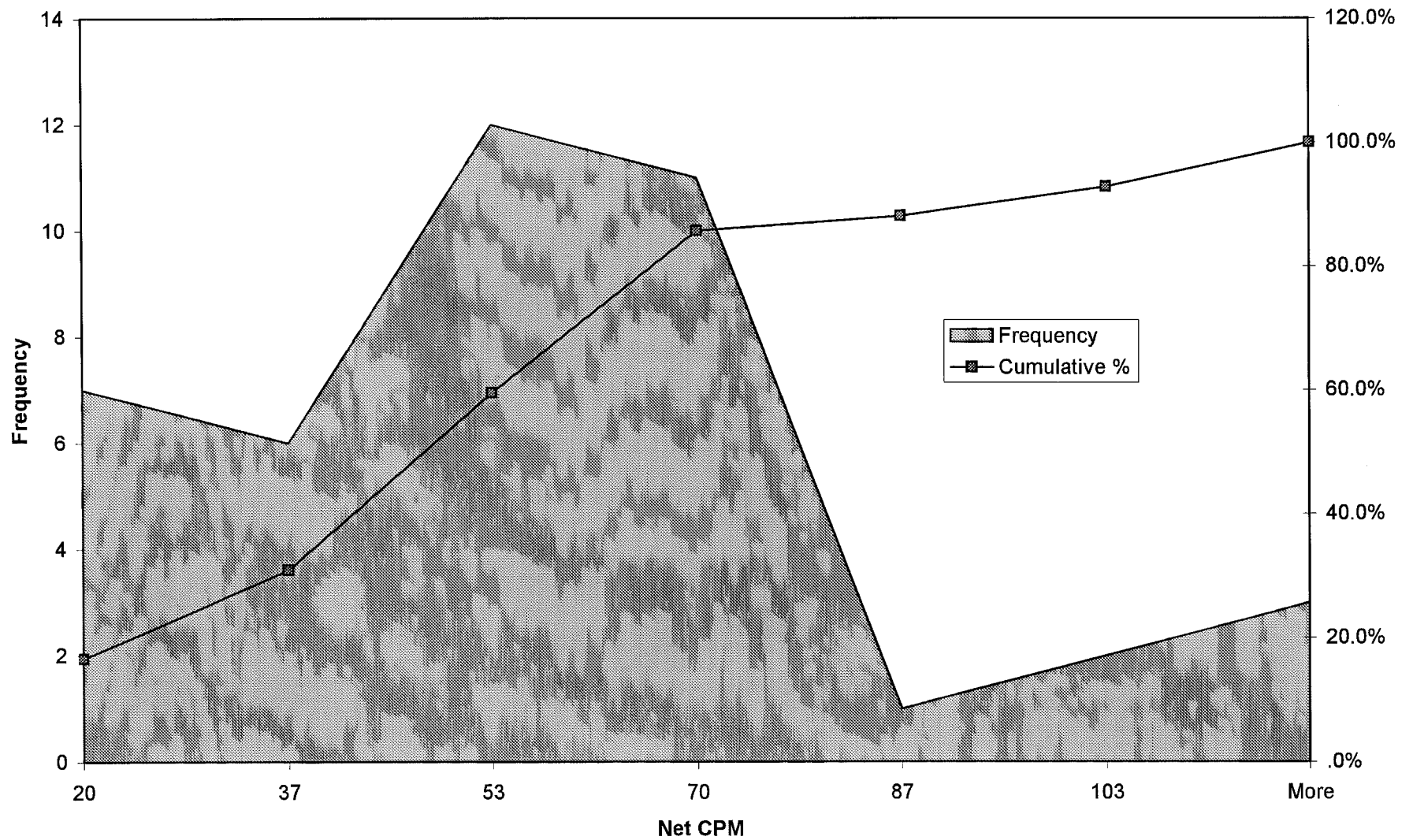
DATA TRENDS

REPORT #004

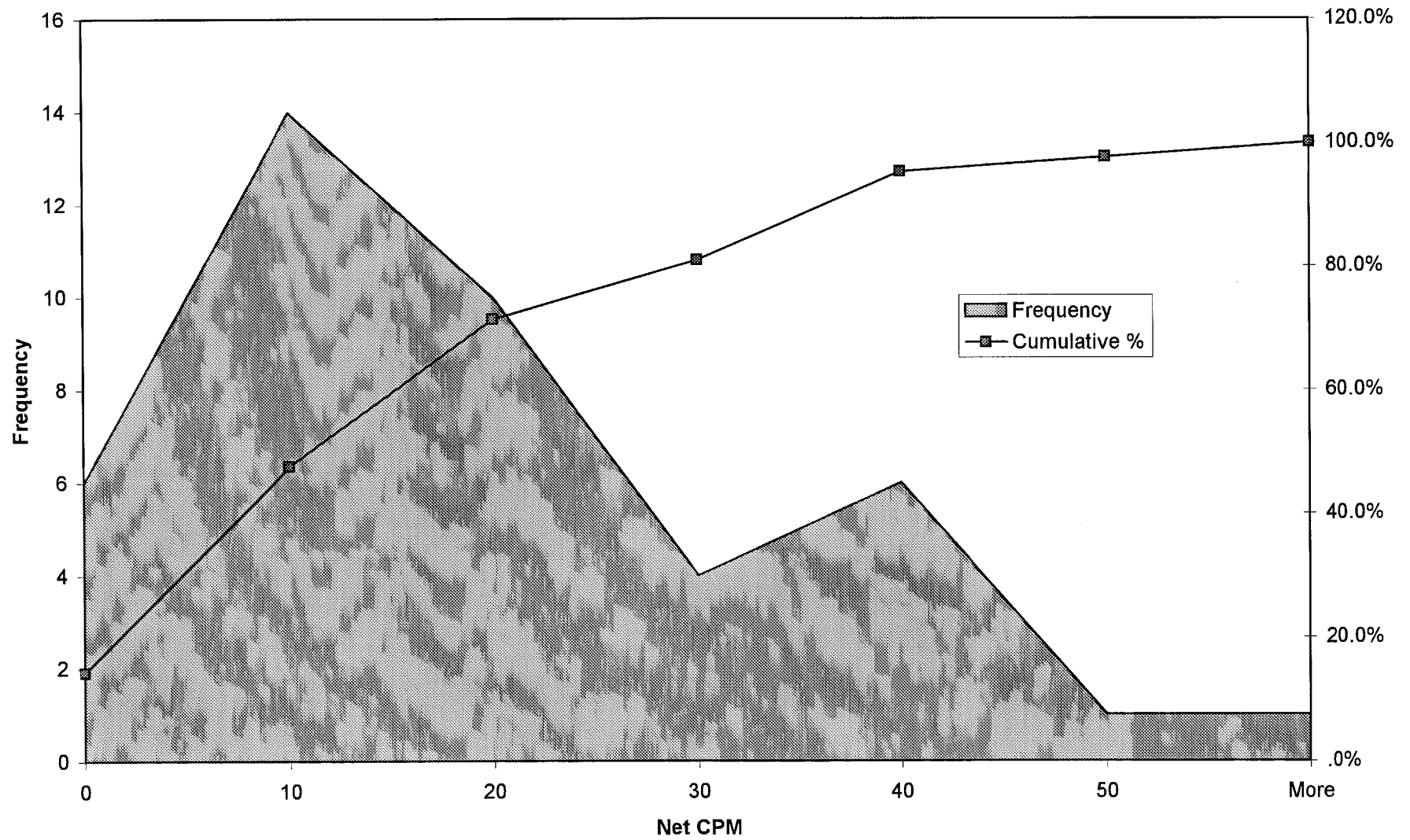
Roof Drain & Vent Internals Data Trends



Roof Drain & Vent Beta Scan Maximum (minus background) Histogram



Roof Drain & Vent Internals Beta Scan Average (minus background) Histogram



APPENDIX F
ROOF SURVEYS

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Survey Date	Survey Serial Number	Surface Description	X	Y	Sub-Unit	Gross Gamma	Gamma MDA	Gross Beta/ Gamma	Beta/ Gamma MDA	Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	Beta Scan	Beta Scan	Beta Scan Alpha DPM per 100cm2	Removable Alpha MDA	Removable Beta DPM per 100cm2	Removable Beta MDA	Comments	
														DPM per 100cm2 Maximum	DPM per 100cm2 Average						
8/13/95	01-419	ROOF	6	-5	1-51-1	8	15	0.056	0.02	37.736	63	78.035	286	517.341	176.301	1300	-0.989	7.64	-3.134	12.71	RUBBER
8/13/95	01-419	ROOF	8	-10	1-51-1	7	15	0.013	0.02	94.340	63	104.046	286	124.277	-54.913	1300	1.956	7.64	-3.134	12.71	RUBBER
8/13/95	01-419	ROOF	1	-16	1-51-1	7	15	0.012	0.02	51.887	63	98.266	286	580.694	118.497	1300	0.484	7.64	-1.805	12.71	DRAIN AREA
8/13/95	01-419	ROOF	6	-20	1-51-1	8	15	0.011	0.02	75.472	63	54.913	286	124.277	-26.012	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/13/95	01-419	ROOF	4	-25	1-51-1	6	15	0.013	0.02	84.906	63	98.266	286	167.630	-54.913	1300	0.484	7.64	4.844	12.71	RUBBER
8/13/95	01-419	ROOF	10	-30	1-51-1	7	15	0.009	0.02	42.453	63	190.751	286	549.133	60.694	1300	3.429	7.64	6.174	12.71	RUBBER
8/13/95	01-419	ROOF	6	-35	1-51-1	6	15	0.015	0.02	23.585	63	-66.474	286	5.780	-112.717	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/13/95	01-419	ROOF	4	-40	1-51-1	6	15	0.013	0.02	37.736	63	-80.925	286	173.410	-112.717	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/13/95	01-419	ROOF	10	-40	1-51-1	7	15	0.012	0.02	61.321	63	-54.913	286	69.364	-54.913	1300	-0.989	7.64	0.855	12.71	RUBBER
8/13/95	01-419	ROOF	6	-45	1-51-1	6	15	0.007	0.02	51.887	63	-28.902	286	75.145	-141.618	1300	-0.989	7.64	0.855	12.71	RUBBER
8/13/95	01-419	ROOF	6	-50	1-51-1	5	15	0.035	0.02	75.472	63	-80.925	286	106.936	-54.913	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/13/95	01-419	ROOF	1	-52	1-51-1	6	15	0.011	0.02	37.736	63	89.595	286	650.289	60.694	1300	-0.989	7.64	-1.805	12.71	ROOF DRAIN AREA
8/13/95	01-419	ROOF	8	-55	1-51-1	6	15	0.015	0.02	56.604	63	26.012	286	306.358	31.792	1300	1.956	7.64	-1.805	12.71	RUBBER
8/13/95	01-419	ROOF	4.5	-61	1-51-1	6	15	0.013	0.02	42.453	63	89.595	286	176.301	-26.012	1300	-0.989	7.64	4.844	12.71	EXHAUST FAN AREA
8/13/95	01-419	ROOF	1.5	-66.5	1-51-1	6	15	0.010	0.02	37.736	63	8.671	286	-37.572	-83.815	1300	-0.989	7.64	0.855	12.71	SEWER VENT AREA
8/13/95	01-419	ROOF	6	-70	1-51-1	7	15	0.013	0.02	51.887	63	-46.243	286	274.566	-112.717	1300	0.484	7.64	-3.134	12.71	RUBBER
8/13/95	01-419	ROOF	1.5	-73.5	1-51-1	7	15	0.015	0.02	99.057	63	78.035	286	248.555	-83.815	1300	-0.989	7.64	0.855	12.71	SEWER VENT AREA
8/13/95	01-419	ROOF	6	-80	1-51-1	6	15	0.032	0.02	61.321	63	-98.266	286	320.809	-54.913	1300	-0.989	7.64	7.504	12.71	RUBBER
8/13/95	01-419	ROOF	10	-85	1-51-1	6	15	0.007	0.02	28.302	63	-52.023	286	208.092	2.890	1300	-0.989	7.64	0.855	12.71	RUBBER
8/13/95	01-419	ROOF	1	-89	1-51-1	6	15	0.022	0.02	51.887	63	164.740	286	1294.798	205.202	1300	0.484	7.64	3.514	12.71	ROOF DRAIN AREA
8/13/95	01-419	ROOF	6	-95	1-51-1	5	15	0.011	0.02	66.038	63	-23.121	286	86.705	-83.815	1300	-0.989	7.64	0.855	12.71	RUBBER
8/13/95	01-419	ROOF	8	-100	1-51-1	6	15	0.029	0.02	75.472	63	66.474	286	167.630	-26.012	1300	-0.989	7.64	3.514	12.71	RUBBER
8/13/95	01-419	ROOF	4	-105	1-51-1	6	15	0.012	0.02	84.906	63	124.277	286	580.925	2.890	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/13/95	01-419	ROOF	6	-110	1-51-1	6	15	0.064	0.02	94.340	63	-5.780	286	271.676	-26.012	1300	0.484	7.64	3.514	12.71	RUBBER
8/13/95	01-419	ROOF	4	-115	1-51-1	5	15	0.009	0.02	47.170	63	-124.277	286	118.497	-54.913	1300	-0.989	7.64	6.174	12.71	AIR INTAKE STRUCTURE
8/13/95	01-419	ROOF	6	-120	1-51-1	6	15	0.012	0.02	42.453	63	-2.890	286	300.578	2.890	1300	0.484	7.64	2.185	12.71	RUBBER
8/13/95	01-419	ROOF	1	-125	1-51-1	6	15	0.014	0.02	56.604	63	-49.133	286	393.064	60.694	1300	-0.989	7.64	-0.475	12.71	ROOF DRAIN AREA
8/13/95	01-419	ROOF	6	-130	1-51-1	6	15	0.011	0.02	66.038	63	-60.694	286	286.127	2.890	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/13/95	01-419	ROOF	6	-135	1-51-1	6	15	0.008	0.02	70.755	63	52.023	286	193.642	-54.913	1300	-0.989	7.64	0.855	12.71	RUBBER
8/13/95	01-419	ROOF	2	-140	1-51-1	7	15	0.020	0.02	56.604	63	147.399	286	315.029	60.694	1300	0.484	7.64	2.185	12.71	RUBBER

[illegible]

Survey Date	Survey Serial Number	Surface Description	X	Y	Sub-Unit	Gross		Beta/		Alpha DPM per 100cm2	Alpha MDA	Beta		Beta Scan	Beta Scan	Beta MDA	Removable		Removable		Comments
						Gamma	MDA	Gamma	MDA			DPM per 100cm2	DPM per 100cm2	Maximum	Average		Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	
8/17/95	01-420	RUBBER ROOF	16	-5	1-52-1	6	15	0.015	0.02	9.434	63	26.012	286	202.312	78.035	1300	-0.989	7.64	2.185	12.71	
8/17/95	01-420	RUBBER ROOF	22	-10	1-52-1	6	15	0.010	0.02	28.302	63	78.035	286	317.919	106.936	1300	-0.989	7.64	4.844	12.71	
8/17/95	01-420	ROOF DRAIN	1	-8	1-52-1	5	15	0.010	0.02	75.472	63	265.896	286	364.162	78.035	1300	-0.989	7.64	3.514	12.71	
8/17/95	01-420	ROOF DRAIN	35.5	-7	1-52-1	9	15	0.015	0.02	33.019	63	213.873	286	297.688	135.838	1300	-0.989	7.64	0.855	12.71	
8/17/95	01-420	RUBBER ROOF	10	-15	1-52-1	7	15	0.010	0.02	9.434	63	-31.792	286	225.434	20.231	1300	0.484	7.64	-0.475	12.71	
8/17/95	01-420	RUBBER ROOF	16	-20	1-52-1	6	15	0.015	0.02	28.302	63	109.827	286	187.861	-8.671	1300	1.956	7.64	7.504	12.71	
8/17/95	01-420	RUBBER ROOF	24	-25	1-52-1	6	15	0.025	0.02	28.302	63	5.780	286	106.936	-8.671	1300	-0.989	7.64	2.185	12.71	
8/17/95	01-420	RUBBER ROOF	16	-30	1-52-1	5	15	0.010	0.02	47.170	63	66.474	286	300.578	78.035	1300	-0.989	7.64	2.185	12.71	
8/17/95	01-420	ROOF DRAIN	1	-37	1-52-1	5	15	0.010	0.02	61.321	63	153.179	286	427.746	164.740	1300	-0.989	7.64	0.855	12.71	
8/17/95	01-420	ROOF DRAIN	35.5	-37	1-52-1	7	15	0.015	0.02	66.038	63	89.595	286	210.983	20.231	1300	1.956	7.64	3.514	12.71	
8/17/95	01-420	ROOF VENTS	35	-23	1-52-1	7	15	0.010	0.02	42.453	63	254.335	286	332.370	106.936	1300	0.484	7.64	0.855	12.71	
8/17/95	01-420	ROOF VENTS	34	-31	1-52-1	7	15	0.015	0.02	37.736	63	-37.572	286	335.260	-8.671	1300	-0.989	7.64	-1.805	12.71	
8/17/95	01-420	ROOF VENTS	34	-35	1-52-1	6	15	0.010	0.02	61.321	63	17.341	286	245.665	-8.671	1300	0.484	7.64	2.185	12.71	
8/17/95	01-420	ROOF VENTS	34	-37	1-52-1	7	15	0.010	0.02	47.170	63	46.243	286	176.301	49.133	1300	-0.989	7.64	2.185	12.71	
8/17/95	01-420	RUBBER ROOF	16	-40	1-52-1	5	15	0.015	0.02	23.585	63	40.462	286	153.179	49.133	1300	0.484	7.64	4.844	12.71	
8/17/95	01-420	RUBBER ROOF	8	-45	1-52-1	5	15	0.020	0.02	51.887	63	34.682	286	245.665	20.231	1300	-0.989	7.64	2.185	12.71	
8/17/95	01-420	RUBBER ROOF	22	-50	1-52-1	5	15	0.010	0.02	47.170	63	5.780	286	343.931	78.035	1300	-0.989	7.64	2.185	12.71	
8/17/95	01-420	RUBBER ROOF	28	-55	1-52-1	6	15	0.020	0.02	66.038	63	104.046	286	236.994	106.936	1300	-0.989	7.64	-0.475	12.71	
8/17/95	01-420	RUBBER ROOF	16	-62	1-52-1	5	15	0.025	0.02	89.623	63	115.607	286	170.520	49.133	1300	-0.989	7.64	-1.805	12.71	
8/17/95	01-420	ROOF DRAIN	1	-73	1-52-1	5	15	0.010	0.02	42.453	63	320.809	286	479.769	164.740	1300	1.956	7.64	0.855	12.71	
8/17/95	01-420	ROOF DRAIN	35.5	-73	1-52-1	6	15	0.015	0.02	9.434	63	83.815	286	338.150	164.740	1300	-0.989	7.64	-3.134	12.71	
8/17/95	01-420	RUBBER ROOF	16	-80	1-52-1	5	15	0.020	0.02	51.887	63	8.671	286	187.861	-8.671	1300	0.484	7.64	4.844	12.71	
8/17/95	01-420	FAN EXHAUST	34	-88	1-52-1	7	15	0.010	0.02	28.302	63	-14.451	286	708.092	164.740	1300	1.956	7.64	2.185	12.71	
8/17/95	01-420	RUBBER ROOF	16	-95	1-52-1	5	15	0.010	0.02	75.472	63	63.584	286	289.017	20.231	1300	0.484	7.64	0.855	12.71	
8/17/95	01-420	RUBBER ROOF	16	-105	1-52-1	6	15	0.010	0.02	51.887	63	153.179	286	346.821	78.035	1300	0.484	7.64	6.174	12.71	
8/17/95	01-420	ROOF DRAIN	1	-110	1-52-1	5	15	0.020	0.02	33.019	63	193.642	286	277.457	20.231	1300	-0.989	7.64	3.514	12.71	
8/17/95	01-420	ROOF DRAIN	35.5	-110	1-52-1	6	15	0.015	0.02	47.170	63	132.948	286	248.555	106.936	1300	0.484	7.64	-3.134	12.71	
8/17/95	01-420	ROOF DRAIN	35.5	-147	1-52-1	6	15	0.015	0.02	23.585	63	92.486	286	306.358	135.838	1300	-0.989	7.64	-0.475	12.71	
8/17/95	01-420	ROOF DRAIN	1	-147	1-52-1	5	15	0.015	0.02	56.604	63	156.069	286	323.699	49.133	1300	-0.989	7.64	0.855	12.71	
8/17/95	01-420	WASTE VENT	27.5	-160	1-52-1	5	15	0.020	0.02	51.887	63	98.266	286	216.763	49.133	1300	-0.989	7.64	-0.475	12.71	

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Survey Date	Survey Serial Number	Surface Description	X	Y	Sub-Unit	Gross Gamma	Gamma MDA	Gross Beta/ Gamma	Beta/ Gamma MDA	Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	Beta Scan	Beta Scan	Beta Scan MDA	Removable	Removable	Removable	Comments	
														DPM per 100cm2 Maximum	DPM per 100cm2 Average		Alpha DPM per 100cm2	Beta DPM per 100cm2	Beta MDA		
8/18/95	01-421	ROOF	18	-5	1-53-1	6	15	0.015	0.02	61.321	63	196.532	286	317.919	75.145	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/18/95	01-421	DRAIN AREA	36.5	-9	1-53-1	6	15	0.010	0.02	37.736	63	202.312	286	352.601	132.948	1300	0.484	7.64	-1.805	12.71	
8/18/95	01-421	ROOF	18	-10	1-53-1	4	15	0.020	0.02	37.736	63	130.058	286	144.509	17.341	1300	0.484	7.64	-3.134	12.71	RUBBER
8/18/95	01-421	ROOF	10	-15	1-53-1	5	15	0.015	0.02	-9.434	63	46.243	286	182.081	46.243	1300	-0.989	7.64	-3.134	12.71	RUBBER
8/18/95	01-421	ROOF DRAIN	1	-17.5	1-53-1	5	15	0.010	0.02	56.604	63	132.948	286	338.150	46.243	1300	0.484	7.64	-0.475	12.71	
8/18/95	01-421	ROOF	35	-26	1-53-1	5	15	0.015	0.02	28.302	63	-26.012	286	164.740	-11.561	1300	-0.989	7.64	0.855	12.71	RUBBER
8/18/95	01-421	ROOF	18	-30	1-53-1	5	15	0.015	0.02	56.604	63	40.462	286	442.197	161.850	1300	-0.989	7.64	3.514	12.71	RUBBER
8/18/95	01-421	ROOF DRAIN	1	-37	1-53-1	4	15	0.020	0.02	23.585	63	179.191	286	505.780	219.653	1300	-0.989	7.64	2.185	12.71	
8/18/95	01-421	ROOF DRAIN	36.5	-37	1-53-1	4	15	0.010	0.02	61.321	63	147.399	286	338.150	104.046	1300	-0.989	7.64	0.855	12.71	
8/18/95	01-421	ROOF	26	-45	1-53-1	5	15	0.010	0.02	33.019	63	40.462	286	387.283	104.046	1300	-0.989	7.64	0.855	12.71	RUBBER
8/18/95	01-421	ROOF	8	-50	1-53-1	5	15	0.015	0.02	28.302	63	37.572	286	257.225	46.243	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/18/95	01-421	ROOF	18	-60	1-53-1	5	15	0.010	0.02	47.170	63	60.694	286	135.838	46.243	1300	-0.989	7.64	2.185	12.71	RUBBER
8/18/95	01-421	ROOF	26	-65	1-53-1	6	15	0.015	0.02	33.019	63	52.023	286	236.994	104.046	1300	1.956	7.64	3.514	12.71	RUBBER
8/18/95	01-421	ROOF DRAINS	1	-74	1-53-1	5	15	0.020	0.02	47.170	63	274.566	286	407.514	219.653	1300	0.484	7.64	3.514	12.71	
8/18/95	01-421	ROOF DRAINS	36.5	-74	1-53-1	5	15	0.010	0.02	108.491	63	283.237	286	378.613	219.653	1300	0.484	7.64	0.855	12.71	
8/18/95	01-421	ROOF	16	-80	1-53-1	5	15	0.020	0.02	37.736	63	184.971	286	309.249	190.751	1300	0.484	7.64	2.185	12.71	RUBBER
8/18/95	01-421	ROOF	26	-90	1-53-1	4	15	0.015	0.02	18.868	63	78.035	286	236.994	104.046	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/18/95	01-421	ROOF	18	-95	1-53-1	5	15	0.015	0.02	66.038	63	135.838	286	335.260	46.243	1300	-0.989	7.64	0.855	12.71	RUBBER
8/18/95	01-421	ROOF	10	-105	1-53-1	5	15	0.015	0.02	33.019	63	141.618	286	372.832	104.046	1300	1.956	7.64	-1.805	12.71	RUBBER
8/18/95	01-421	ROOF DRAIN	1	-111	1-53-1	5	15	0.010	0.02	51.887	63	158.960	286	323.699	132.948	1300	-0.989	7.64	-3.134	12.71	
8/18/95	01-421	ROOF DRAIN	36.5	-111	1-53-1	6	15	0.020	0.02	37.736	63	234.104	286	445.087	161.850	1300	0.484	7.64	4.844	12.71	
8/18/95	01-421	ROOF	22	-120	1-53-1	5	15	0.010	0.02	33.019	63	28.902	286	216.763	46.243	1300	-0.989	7.64	0.855	12.71	RUBBER
8/18/95	01-421	ROOF	18	-125	1-53-1	4	15	0.020	0.02	80.189	63	31.792	286	303.468	46.243	1300	3.429	7.64	-0.475	12.71	RUBBER
8/18/95	01-421	ROOF	10	-130	1-53-1	4	15	0.010	0.02	37.736	63	86.705	286	393.064	104.046	1300	1.956	7.64	8.833	12.71	RUBBER
8/18/95	01-421	ROOF	6	-135	1-53-1	5	15	0.010	0.02	33.019	63	78.035	286	268.786	132.948	1300	7.846	7.64	2.185	12.71	RUBBER
8/18/95	01-421	ROOF	18	-140	1-53-1	4	15	0.015	0.02	23.585	63	109.827	286	179.191	46.243	1300	-0.989	7.64	-3.134	12.71	RUBBER
8/18/95	01-421	ROOF DRAIN	1	-147	1-53-1	5	15	0.010	0.02	80.189	63	167.630	286	447.977	190.751	1300	0.484	7.64	3.514	12.71	
8/18/95	01-421	ROOF DRAIN	36.5	-147	1-53-1	6	15	0.015	0.02	47.170	63	190.751	286	549.133	219.653	1300	1.956	7.64	-0.475	12.71	
8/18/95	01-421	ROOF	18	-155	1-53-1	6	15	0.020	0.02	47.170	63	72.254	286	234.104	104.046	1300	3.429	7.64	-1.805	12.71	RUBBER
8/18/95	01-421	ROOF	8	-160	1-53-1	5	15	0.015	0.02	18.868	63	43.353	286	332.370	161.850	1300	-0.989	7.64	-1.805	12.71	RUBBER

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Survey Date	Survey Serial Number	Surface Description	X	Y	Sub-Unit	Gross Gamma	Gamma MDA	Gross Beta/ Gamma	Beta/ Gamma MDA	Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	Beta Scan	Beta Scan	Removable Alpha DPM per 100cm2	Removable Alpha MDA	Removable Beta DPM per 100cm2	Removable Beta MDA	Comments	
														DPM per 100cm2 Maximum	DPM per 100cm2 Average						
8/19/95	01-422	ROOF	5	-5	1-54-1	6	15	0.010	0.02	99.057	63	69.364	286	528.902	75.145	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF	29	-10	1-54-1	5	15	0.015	0.02	51.887	63	219.653	286	291.908	46.243	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/19/95	01-422	ROOF	12.5	-15	1-54-1	5	15	0.015	0.02	51.887	63	40.462	286	265.896	46.243	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF DRAIN	30	-19	1-54-1	5	15	0.010	0.02	117.925	63	28.902	286	144.509	17.341	1300	0.484	7.64	-1.805	12.71	
8/19/95	01-422	ROOF	20	-25	1-54-1	5	15	0.015	0.02	28.302	63	23.121	286	329.480	-11.561	1300	1.956	7.64	2.185	12.71	RUBBER
8/19/95	01-422	ROOF	25	-30	1-54-1	5	15	0.010	0.02	56.604	63	104.046	286	378.613	104.046	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/19/95	01-422	ROOF	30	-35	1-54-1	5	15	0.020	0.02	33.019	63	-37.572	286	358.382	104.046	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/19/95	01-422	ROOF	18	-40	1-54-1	5	15	0.010	0.02	89.623	63	43.353	286	234.104	104.046	1300	-0.989	7.64	3.514	12.71	RUBBER
8/19/95	01-422	ROOF	12.5	-45	1-54-1	5	15	0.025	0.02	47.170	63	-17.341	286	494.220	75.145	1300	-0.989	7.64	-3.134	12.71	RUBBER
8/19/95	01-422	ROOF	25	-50	1-54-1	5	15	0.010	0.02	66.038	63	11.561	286	393.064	46.243	1300	-0.989	7.64	-1.805	12.71	RUBBER
8/19/95	01-422	ROOF DRAIN	30	-55.5	1-54-1	4	15	0.010	0.02	89.623	63	289.017	286	228.324	104.046	1300	-0.989	7.64	-0.475	12.71	
8/19/95	01-422	ROOF	22	-60	1-54-1	6	15	0.015	0.02	42.453	63	251.445	286	393.064	46.243	1300	0.484	7.64	3.514	12.71	RUBBER
8/19/95	01-422	ROOF	14	-65	1-54-1	5	15	0.010	0.02	51.887	63	115.607	286	283.237	46.243	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF	25	-70	1-54-1	6	15	0.020	0.02	42.453	63	37.572	286	245.665	17.341	1300	-0.989	7.64	0.855	12.71	RUBBER
8/19/95	01-422	ROOF	30	-75	1-54-1	4	15	0.015	0.02	56.604	63	-11.561	286	332.370	-40.462	1300	0.484	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF	25	-80	1-54-1	4	15	0.020	0.02	84.906	63	109.827	286	236.994	46.243	1300	0.484	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF	20	-85	1-54-1	5	15	0.020	0.02	61.321	63	127.168	286	369.942	75.145	1300	0.484	7.64	4.844	12.71	RUBBER
8/19/95	01-422	ROOF	24	-90	1-54-1	5	15	0.025	0.02	42.453	63	23.121	286	251.445	17.341	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF DRAIN	30	-92	1-54-1	5	15	0.020	0.02	66.038	63	248.555	286	436.416	75.145	1300	-0.989	7.64	-0.475	12.71	
8/19/95	01-422	ROOF	20	-95	1-54-1	6	15	0.015	0.02	47.170	63	49.133	286	147.399	17.341	1300	0.484	7.64	-3.134	12.71	RUBBER
8/19/95	01-422	ROOF	16	-100	1-54-1	6	15	0.010	0.02	23.585	63	83.815	286	268.786	46.243	1300	0.484	7.64	-4.464	12.71	RUBBER
8/19/95	01-422	ROOF	27	-105	1-54-1	5	15	0.010	0.02	56.604	63	-40.462	286	355.491	17.341	1300	0.484	7.64	-1.805	12.71	RUBBER
8/19/95	01-422	ROOF	30	-110	1-54-1	4	15	0.015	0.02	80.189	63	109.827	286	323.699	104.046	1300	-0.989	7.64	0.855	12.71	RUBBER
8/19/95	01-422	ROOF	25	-115	1-54-1	5	15	0.010	0.02	56.604	63	20.231	286	421.965	46.243	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF	16	-120	1-54-1	6	15	0.020	0.02	70.755	63	89.595	286	161.850	46.243	1300	-0.989	7.64	-0.475	12.71	RUBBER
8/19/95	01-422	ROOF	25	-125	1-54-1	5	15	0.015	0.02	37.736	63	46.243	286	320.809	-11.561	1300	-0.989	7.64	0.855	12.71	RUBBER
8/19/95	01-422	ROOF DRAIN	30	-128	1-54-1	5	15	0.010	0.02	28.302	63	236.994	286	416.185	75.145	1300	-0.989	7.64	-3.134	12.71	
8/19/95	01-422	ROOF	30	-135	1-54-1	4	15	0.015	0.02	84.906	63	17.341	286	476.879	132.948	1300	0.484	7.64	-1.805	12.71	RUBBER
8/19/95	01-422	ROOF	30	-140	1-54-1	4	15	0.015	0.02	51.887	63	158.960	286	413.295	132.948	1300	-0.989	7.64	11.493	12.71	RUBBER
8/19/95	01-422	ROOF	25	-145	1-54-1	5	15	0.020	0.02	66.038	63	66.474	286	222.543	75.145	1300	-0.989	7.64	0.855	12.71	RUBBER

[illegible]

Survey Date	Survey Serial Number	Surface Description	X	Y	Sub-Unit	Gross Gamma	Gamma MDA	Gross Beta/ Gamma	Beta/ Gamma MDA	Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	Beta Scan	Beta Scan	Beta Scan MDA	Removable Alpha DPM per 100cm2	Removable Alpha MDA	Removable Beta DPM per 100cm2	Removable Beta MDA	Comments
														DPM per 100cm2 Maximum	DPM per 100cm2 Average						
8/29/95	01-427	ROOFTOP	6	-2	1-55-1	5	15	0.014	0.02	33.02	63	115.61	286	508.67	-31.79	1300	2.82	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOF DRAIN	1	-6	1-55-1	6	15	0.009	0.02	42.45	63	161.85	286	329.48	112.72	1300	-1.61	7.64	-3.21	12.71	
8/29/95	01-427	ROOFTOP	8	-10	1-55-1	5	15	0.012	0.02	89.62	63	26.01	286	323.70	112.72	1300	1.34	7.64	-3.21	12.71	RUBBER
8/29/95	01-427	ROOFTOP	4	-15	1-55-1	5	15	0.007	0.02	75.47	63	92.49	286	419.08	-60.69	1300	5.77	7.64	0.80	12.71	RUBBER
8/29/95	01-427	ROOFTOP	2	-20	1-55-1	6	15	0.008	0.02	66.04	63	0.00	286	491.33	-31.79	1300	4.29	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	4	-25	1-55-1	6	15	0.009	0.02	94.34	63	138.73	286	381.50	199.42	1300	-0.13	7.64	8.82	12.71	RUBBER
8/29/95	01-427	ROOF DRAIN	1	-30	1-55-1	5	15	0.014	0.02	99.06	63	161.85	286	442.20	257.23	1300	1.34	7.64	-0.53	12.71	
8/29/95	01-427	ROOFTOP	4	-35	1-55-1	6	15	0.012	0.02	155.66	63	182.08	286	421.97	170.52	1300	-1.61	7.64	6.15	12.71	RUBBER
8/29/95	01-427	ROOFTOP	8	-40	1-55-1	6	15	0.016	0.02	136.79	63	216.76	286	315.03	54.91	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	12	-45	1-55-1	5	15	0.013	0.02	155.66	63	184.97	286	317.92	112.72	1300	-1.61	7.64	-1.87	12.71	RUBBER
8/29/95	01-427	ROOFTOP	6	-50	1-55-1	4	15	0.017	0.02	169.81	63	234.10	286	309.25	141.62	1300	1.34	7.64	-1.87	12.71	RUBBER
8/29/95	01-427	ROOFTOP	4	-55	1-55-1	6	15	0.007	0.02	226.42	63	182.08	286	560.69	199.42	1300	-0.13	7.64	2.14	12.71	RUBBER
8/29/95	01-427	ROOFTOP	1	-60	1-55-1	6	15	0.007	0.02	150.94	63	115.61	286	589.60	286.13	1300	-1.61	7.64	-4.55	12.71	RUBBER
8/29/95	01-427	ROOF DRAIN	1	-67	1-55-1	7	15	0.016	0.02	117.92	63	346.82	286	606.94	170.52	1300	1.34	7.64	0.80	12.71	
8/29/95	01-427	ROOFTOP	8	-70	1-55-1	7	15	0.016	0.02	56.60	63	173.41	286	488.44	257.23	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	2	-75	1-55-1	6	15	0.009	0.02	61.32	63	341.04	286	381.50	112.72	1300	-0.13	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	8	-75	1-55-1	6	15	0.014	0.02	84.91	63	289.02	286	606.94	315.03	1300	1.34	7.64	-3.21	12.71	RUBBER
8/29/95	01-427	ROOFTOP	6	-80	1-55-1	6	15	0.019	0.02	113.21	63	158.96	286	502.89	170.52	1300	-1.61	7.64	4.81	12.71	RUBBER
8/29/95	01-427	ROOFTOP	1	-85	1-55-1	5	15	0.014	0.02	37.74	63	251.45	286	398.84	199.42	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	12	-85	1-55-1	5	15	0.008	0.02	183.96	63	265.90	286	488.44	170.52	1300	-1.61	7.64	-4.55	12.71	RUBBER
8/29/95	01-427	ROOFTOP	4	-90	1-55-1	5	15	0.015	0.02	89.62	63	427.75	286	494.22	170.52	1300	-1.61	7.64	-4.55	12.71	RUBBER
8/29/95	01-427	ROOFTOP	8	-90	1-55-1	6	15	0.015	0.02	132.08	63	424.86	286	520.23	315.03	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	2	-95	1-55-1	5	15	0.017	0.02	89.62	63	427.75	286	358.38	112.72	1300	-0.13	7.64	0.80	12.71	RUBBER
8/29/95	01-427	ROOFTOP	12	-95	1-55-1	5	15	0.011	0.02	155.66	63	271.68	286	416.18	228.32	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	4	-100	1-55-1	6	15	0.008	0.02	150.94	63	245.66	286	580.92	257.23	1300	1.34	7.64	0.80	12.71	RUBBER
8/29/95	01-427	ROOF DRAIN	1	-102.5	1-55-1	6	15	0.014	0.02	146.23	63	459.54	286	378.61	228.32	1300	2.82	7.64	-3.21	12.71	
8/29/95	01-427	ROOFTOP	6	-105	1-55-1	6	15	0.014	0.02	75.47	63	268.79	286	627.17	286.13	1300	-1.61	7.64	2.14	12.71	RUBBER
8/29/95	01-427	ROOFTOP	1	-110	1-55-1	6	15	0.015	0.02	117.92	63	312.14	286	658.96	372.83	1300	-0.13	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	10	-110	1-55-1	5	15	0.013	0.02	127.36	63	199.42	286	624.28	286.13	1300	1.34	7.64	-0.53	12.71	RUBBER
8/29/95	01-427	ROOFTOP	4	-115	1-55-1	6	15	0.012	0.02	202.83	63	346.82	286	653.18	228.32	1300	-1.61	7.64	0.80	12.71	RUBBER

[illegible]

Survey Date	Survey Serial Number	Surface Description	X	Y	Sub-Unit	Gross Gamma	Gamma MDA	Gross Beta/ Gamma	Beta/ Gamma MDA	Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	Beta Scan	Beta Scan	Beta Scan Alpha DPM per 100cm2	Removable Alpha DPM per 100cm2	Removable Alpha MDA	Removable Beta DPM		Comments
														DPM per Maximum	DPM per Average				per 100cm2	Beta MDA	
8/30/95	01-429	ROOFTOP	2	-2	1-56-1	6	15	0.011	0.02	9.43	63	-8.67	286	234.10	28.90	1300	-1.61	7.64	-4.55	12.71	RUBBER
8/30/95	01-429	ROOFTOP	4	-2	1-56-1	6	15	0.014	0.02	0.00	63	17.34	286	257.23	0.00	1300	1.34	7.64	-3.21	12.71	RUBBER
8/30/95	01-429	ROOFTOP	6	-2	1-56-1	7	15	0.012	0.02	23.58	63	14.45	286	303.47	0.00	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/30/95	01-429	ROOFTOP	8	-2	1-56-1	6	15	0.009	0.02	28.30	63	89.60	286	289.02	0.00	1300	-1.61	7.64	-4.55	12.71	RUBBER
8/30/95	01-429	ROOFTOP	10	-2	1-56-1	7	15	0.012	0.02	0.00	63	5.78	286	101.16	-57.80	1300	-1.61	7.64	0.80	12.71	RUBBER
8/30/95	01-429	ROOFTOP	12	-4	1-56-1	5	15	0.013	0.02	14.15	63	2.89	286	193.64	-57.80	1300	1.34	7.64	2.14	12.71	RUBBER
8/30/95	01-429	ROOFTOP	18	-4	1-56-1	7	15	0.013	0.02	4.72	63	34.68	286	167.63	28.90	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/30/95	01-429	ROOFTOP	6	-6	1-56-1	5	15	0.018	0.02	23.58	63	-63.58	286	257.23	-28.90	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/30/95	01-429	ROOFTOP	10	-6	1-56-1	5	15	0.017	0.02	37.74	63	-11.56	286	213.87	28.90	1300	1.34	7.64	2.14	12.71	RUBBER
8/30/95	01-429	ROOFTOP	16	-6	1-56-1	6	15	0.012	0.02	61.32	63	66.47	286	208.09	-57.80	1300	1.34	7.64	2.14	12.71	RUBBER
8/30/95	01-429	ROOFTOP	4	-8	1-56-1	6	15	0.009	0.02	14.15	63	86.71	286	173.41	-86.71	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/30/95	01-429	ROOFTOP	8	-8	1-56-1	6	15	0.012	0.02	37.74	63	69.36	286	179.19	0.00	1300	-1.61	7.64	0.80	12.71	RUBBER
8/30/95	01-429	ROOFTOP	18	-8	1-56-1	7	15	0.012	0.02	23.58	63	112.72	286	445.09	144.51	1300	-1.61	7.64	0.80	12.71	RUBBER
8/30/95	01-429	ROOFTOP	6	-10	1-56-1	6	15	0.013	0.02	14.15	63	43.35	286	170.52	-86.71	1300	-1.61	7.64	-5.88	12.71	RUBBER
8/30/95	01-429	ROOFTOP	14	-10	1-56-1	6	15	0.012	0.02	28.30	63	72.25	286	320.81	28.90	1300	-0.13	7.64	-1.87	12.71	RUBBER
8/29/95	01-428	ROOFTOP	2	-4	1-56-2	6	15	0.011	0.02	42.45	63	54.91	286	300.58	86.71	1300	-1.61	7.64	-1.87	12.71	RUBBER
8/29/95	01-428	ROOFTOP	2	-8	1-56-2	6	15	0.016	0.02	113.21	63	75.14	286	419.08	28.90	1300	1.34	7.64	2.14	12.71	RUBBER
8/29/95	01-428	ROOFTOP	4	-1	1-56-2	7	15	0.015	0.02	28.30	63	2.89	286	627.17	297.69	1300	-0.13	7.64	-0.53	12.71	RUBBER
8/29/95	01-428	ROOFTOP	4	-6	1-56-2	8	15	0.007	0.02	61.32	63	118.50	286	514.45	202.31	1300	-1.61	7.64	-1.87	12.71	RUBBER
8/29/95	01-428	ROOFTOP	6	-6	1-56-2	7	15	0.013	0.02	47.17	63	49.13	286	407.51	144.51	1300	-1.61	7.64	-1.87	12.71	RUBBER
8/29/95	01-428	ROOFTOP	6	-12	1-56-2	6	15	0.014	0.02	75.47	63	173.41	286	606.94	86.71	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/29/95	01-428	ROOFTOP	10	-8	1-56-2	8	15	0.014	0.02	61.32	63	135.84	286	447.98	144.51	1300	2.82	7.64	2.14	12.71	RUBBER
8/29/95	01-428	ROOF DRAIN	12	-0.5	1-56-2	7	15	0.013	0.02	56.60	63	141.62	286	213.87	28.90	1300	-0.13	7.64	-4.55	12.71	
8/29/95	01-428	ROOFTOP	12	-10	1-56-2	8	15	0.008	0.02	42.45	63	83.82	286	606.94	173.41	1300	1.34	7.64	-5.88	12.71	RUBBER
8/29/95	01-428	ROOFTOP	14	-4	1-56-2	7	15	0.018	0.02	56.60	63	138.73	286	352.60	144.51	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/29/95	01-428	ROOFTOP	14	-11	1-56-2	8	15	0.013	0.02	89.62	63	40.46	286	497.11	144.51	1300	1.34	7.64	0.80	12.71	RUBBER
8/29/95	01-428	ROOFTOP	16	-2	1-56-2	7	15	0.01	0.02	61.32	63	132.95	286	329.48	-57.80	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/29/95	01-428	ROOFTOP	16	-8	1-56-2	8	15	0.015	0.02	103.77	63	219.65	286	254.34	28.90	1300	2.82	7.64	-1.87	12.71	RUBBER
8/29/95	01-428	ROOFTOP	18	-4	1-56-2	7	15	0.008	0.02	103.77	63	20.23	286	205.20	-28.90	1300	-0.13	7.64	2.14	12.71	RUBBER
8/29/95	01-428	ROOFTOP	18	-10	1-56-2	7	15	0.015	0.02	89.62	63	147.40	286	271.68	86.71	1300	-0.13	7.64	6.15	12.71	RUBBER

	Gross Gamma	Gross BetaGamma	Alpha DPM per 100cm ²	Beta DPM per 100cm ²	Beta Scan DPM per 100cm ² Maximum	Beta Scan DPM per 100cm ² Average	Removable Alpha DPM per 100cm ²	Removable Beta DPM per 100cm ²
Stastical Analysis								
Number of Samples	30	30	30	30	30	30	30	30
Minimum	5	0.007	0.00	-63.58	101.16	-86.71	-1.61	-5.88
Maximum	8	0.018	113.21	219.65	627.17	297.69	2.82	6.15
Average	6.60	0.013	45.13	68.88	318.98	46.53	-0.38	-1.03
Standard Deviation	0.89	0.003	32.13	63.77	143.99	94.24	1.51	2.86
Limit	15	0.20	5000	5000	15000	5000	1000	1000
Factor for Comparison of Survey Data @95% Confidence:	1.699	1.699	1.699	1.699	1.697	1.697	1.697	1.697
Data Test Parameter	6.877	0.014	55.092	88.662	363.592	75.730	0.088	-0.138
"Number of Samples" Factor	9.391	66.975	154.222	77.333	101.955	52.563	664.620	349.626
Does Data Satisfy-Limit Criteria?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were an Adequate Number-of Samples Taken?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Survey Date	Survey Serial Number	Surface Description	X Y Sub-Unit			Gross Gamma	Gamma MDA	Gross Beta/ Gamma	Beta/ Gamma MDA	Alpha DPM per 100cm2	Alpha MDA	Beta DPM per 100cm2	Beta MDA	Beta Scan	Beta Scan	Removable Alpha DPM per 100cm2	Removable Alpha MDA	Removable Beta DPM per 100cm2	Removable Beta MDA	Comments	
														DPM per 100cm2	Average						Scan MDA
8/30/95	04-019	ROOFTOP	2	-2	4-18-1	6	15	0.008	0.02	9.43	63	193.64	286	549.13	216.76	1300	5.77	7.64	6.15	12.71	RUBBER
8/30/95	04-019	ROOFTOP	8	-2	4-18-1	7	15	0.006	0.02	42.45	63	225.43	286	326.59	187.86	1300	-0.13	7.64	0.80	12.71	RUBBER
8/30/95	04-019	ROOFTOP	12	-2	4-18-1	7	15	0.01	0.02	37.74	63	173.41	286	473.99	101.16	1300	-0.13	7.64	-1.87	12.71	RUBBER
8/30/95	04-019	ROOFTOP	16	-2	4-18-1	7	15	0.011	0.02	-4.72	63	69.36	286	208.09	72.25	1300	-0.13	7.64	-0.53	12.71	RUBBER
8/30/95	04-019	ROOFTOP	1	-4	4-18-1	8	15	0.014	0.02	56.60	63	127.17	286	488.44	72.25	1300	1.34	7.64	-1.87	12.71	RUBBER
8/30/95	04-019	ROOFTOP	3	-4	4-18-1	6	15	0.008	0.02	51.89	63	170.52	286	372.83	216.76	1300	-1.61	7.64	2.14	12.71	RUBBER
8/30/95	04-019	ROOFTOP	6	-4	4-18-1	7	15	0.012	0.02	51.89	63	115.61	286	335.26	216.76	1300	1.34	7.64	4.81	12.71	RUBBER
8/30/95	04-019	ROOFTOP	8	-4	4-18-1	7	15	0.007	0.02	42.45	63	57.80	286	346.82	43.35	1300	-1.61	7.64	-1.87	12.71	RUBBER
8/30/95	04-019	ROOFTOP	11	-4	4-18-1	6	15	0.014	0.02	28.30	63	86.71	286	473.99	130.06	1300	1.34	7.64	6.15	12.71	RUBBER
8/30/95	04-019	ROOFTOP	17	-4	4-18-1	6	15	0.007	0.02	33.02	63	124.28	286	335.26	216.76	1300	-0.13	7.64	-0.53	12.71	RUBBER
8/30/95	04-019	ROOFTOP	2	-6	4-18-1	6	15	0.016	0.02	14.15	63	161.85	286	552.02	216.76	1300	1.34	7.64	0.80	12.71	RUBBER
8/30/95	04-019	ROOFTOP	6	-6	4-18-1	6	15	0.011	0.02	42.45	63	98.27	286	404.62	101.16	1300	-0.13	7.64	4.81	12.71	RUBBER
8/30/95	04-019	ROOFTOP	10	-6	4-18-1	6	15	0.01	0.02	42.45	63	225.43	286	251.45	130.06	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/30/95	04-019	ROOFTOP	14	-6	4-18-1	6	15	0.007	0.02	18.87	63	106.94	286	329.48	130.06	1300	1.34	7.64	2.14	12.71	RUBBER
8/30/95	04-019	ROOF DRAIN	18	-5	4-18-1	5	15	0.012	0.02	-9.43	63	210.98	286	265.90	43.35	1300	1.34	7.64	0.80	12.71	
8/30/95	04-019	ROOFTOP	4	-8	4-18-1	8	15	0.008	0.02	56.60	63	115.61	286	419.08	101.16	1300	-0.13	7.64	7.49	12.71	RUBBER
8/30/95	04-019	ROOFTOP	7	-8	4-18-1	6	15	0.005	0.02	37.74	63	179.19	286	257.23	72.25	1300	1.34	7.64	-3.21	12.71	RUBBER
8/30/95	04-019	ROOFTOP	10	-8	4-18-1	6	15	0.011	0.02	66.04	63	277.46	286	407.51	158.96	1300	1.34	7.64	2.14	12.71	RUBBER
8/30/95	04-019	ROOFTOP	16	-8	4-18-1	6	15	0.005	0.02	14.15	63	75.14	286	277.46	14.45	1300	-0.13	7.64	0.80	12.71	RUBBER
8/30/95	04-019	ROOFTOP	2	-10	4-18-1	7	15	0.01	0.02	42.45	63	205.20	286	260.12	130.06	1300	-0.13	7.64	-1.87	12.71	RUBBER
8/30/95	04-019	ROOFTOP	8	-10	4-18-1	6	15	0.008	0.02	23.58	63	222.54	286	395.95	216.76	1300	-0.13	7.64	0.80	12.71	RUBBER
8/30/95	04-019	ROOFTOP	12	-10	4-18-1	5	15	0.007	0.02	18.87	63	141.62	286	419.08	158.96	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/30/95	04-019	ROOFTOP	15	-10	4-18-1	5	15	0.008	0.02	4.72	63	124.28	286	343.93	158.96	1300	-0.13	7.64	2.14	12.71	RUBBER
8/30/95	04-019	ROOFTOP	4	-12	4-18-1	6	15	0.015	0.02	66.04	63	179.19	286	424.86	130.06	1300	-1.61	7.64	-1.87	12.71	RUBBER
8/30/95	04-019	ROOFTOP	10	-12	4-18-1	7	15	0.011	0.02	51.89	63	127.17	286	297.69	158.96	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/30/95	04-019	ROOFTOP	14	-12	4-18-1	6	15	0.012	0.02	18.87	63	147.40	286	320.81	101.16	1300	-1.61	7.64	-0.53	12.71	RUBBER
8/30/95	04-019	ROOFTOP	2	-14	4-18-1	7	15	0.007	0.02	51.89	63	222.54	286	404.62	130.06	1300	-1.61	7.64	-3.21	12.71	RUBBER
8/30/95	04-019	ROOFTOP	6	-14	4-18-1	7	15	0.014	0.02	66.04	63	150.29	286	436.42	187.86	1300	1.34	7.64	0.80	12.71	RUBBER
8/30/95	04-019	ROOFTOP	12	-14	4-18-1	5	15	0.008	0.02	56.60	63	43.35	286	297.69	14.45	1300	-0.13	7.64	-4.55	12.71	RUBBER
8/30/95	04-019	ROOFTOP	16	-14	4-18-1	7	15	0.01	0.02	14.15	63	83.82	286	236.99	-14.45	1300	-0.13	7.64	-3.21	12.71	RUBBER

[illegible]

Roof Drain & Vent Internals

Survey Date	Survey Serial Number	Surface Description	X	Y	Beta Instrument Code	Background CPM	Beta Scan CPM Maximum	Beta Scan CPM Average	Removable Alpha DPM/100cm2	Alpha Count Code	Removable Beta DPM/100cm2	Beta Count Code	Comments
8/13/95	01-419	ROOF DRAIN	1	-16	15	40	120	70	-0.99	2	4.84	3	
8/13/95	01-419	ROOF DRAIN	1	-52	15	40	100	50	0.48	2	-0.47	3	
8/13/95	01-419	ROOF DRAIN	1	-89	15	40	90	50	-0.99	2	2.18	3	
8/13/95	01-419	ROOF DRAIN	1	-125	15	40	90	50	-0.99	2	3.51	3	
8/17/95	01-420	ROOF VENTS	35	-23	15	20	50	30	1.96	2	-0.47	3	
8/17/95	01-420	ROOF VENTS	34	-31	15	20	50	25	1.96	2	-0.47	3	
8/17/95	01-420	ROOF VENTS	34	-35	15	20	60	30	0.48	2	15.48	3	
8/17/95	01-420	ROOF VENTS	34	-37	15	20	40	20	0.48	2	0.85	3	
8/17/95	01-420	FAN EXHAUST	34	-88	15	20	40	30	-0.99	2	-3.13	3	
8/17/95	01-420	WASTE VENT	27.5	-160	15	20	40	20	0.48	2	3.51	3	
8/17/95	01-420	WASTE VENT	29.5	-163	15	20	40	20	-0.99	2	-0.47	3	
8/17/95	01-420	ROOF DRAINS	35.5	-147	15	20	60	40	1.96	2	-0.47	3	
8/17/95	01-420	ROOF DRAINS	1	-147	15	20	60	40	-0.99	2	3.51	3	
8/17/95	01-420	ROOF DRAINS	1	-110	15	20	70	50	0.48	2	-0.47	3	
8/17/95	01-420	ROOF DRAINS	35.5	-110	15	20	70	40	-0.99	2	0.85	3	
8/17/95	01-420	ROOF DRAINS	35.5	-73	15	20	80	40	-0.99	2	-3.13	3	
8/17/95	01-420	ROOF DRAINS	1	-73	15	20	120	60	-0.99	2	3.51	3	
8/17/95	01-420	ROOF DRAINS	1	-37	15	20	130	70	-0.99	2	-1.80	3	
8/17/95	01-420	ROOF DRAINS	35.5	-37	15	20	90	50	0.48	2	12.82	3	
8/17/95	01-420	ROOF DRAINS	35.5	-7	15	20	80	50	-0.99	2	-1.80	3	
8/17/95	01-420	ROOF DRAINS	1	-8	15	20	90	60	-0.99	2	-1.80	3	
8/17/95	01-420	WASTE VENT	2	-76	15	20	40	20		2		3	
8/18/95	01-421	ROOF DRAIN	36.5	-9	15	30	60	40	-0.99	2	27.45	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	1	-17.5	15	30	80	50	-0.99	2	2.18	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	36.5	-37	15	30	130	70	-0.99	2	-1.80	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	1	-37	15	30	90	70	-0.99	2	-0.47	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	36.5	-74	15	30	90	50	0.48	2	-0.47	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	1	-74	15	30	140	90	-0.99	2	0.85	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	36.5	-111	15	30	150	70	-0.99	2	3.51	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	1	-111	15	30	90	40	0.48	2	-0.47	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	36.5	-147	15	30	90	50	-0.99	2	2.18	3	BETA SCAN ONLY
8/18/95	01-421	ROOF DRAIN	1	-147	15	30	100	70	-0.99	2	-0.47	3	BETA SCAN ONLY
8/19/95	01-422	ROOF DRAIN	30	-128	15	35	90	40	1.96	2	3.51	3	BETA SCAN ONLY
8/19/95	01-422	ROOF DRAIN	30	-92	15	35	60	40	1.96	2	0.85	3	BETA SCAN ONLY
8/19/95	01-422	ROOF DRAIN	30	-55.5	15	35	70	40	0.48	2	-0.47	3	BETA SCAN ONLY
8/19/95	01-422	ROOF DRAIN	30	-19	15	35	60	40	-0.99	2	-0.47	3	BETA SCAN ONLY
8/29/95	01-427	ROOF DRAIN	1	-102.5	17	40	90	50	-1.61	2	-3.21	3	BETA SCAN ONLY
8/29/95	01-427	ROOF DRAIN	1	-67	17	40	60	40	-1.61	2	-3.21	3	BETA SCAN ONLY
8/29/95	01-427	ROOF DRAIN	1	-30	17	40	80	60	-1.61	2	-0.53	3	BETA SCAN ONLY
8/29/95	01-427	ROOF DRAIN	1	-6	17	40	60	40	-0.13	2	2.14	3	BETA SCAN ONLY
8/29/95	01-428	ROOF DRAIN	12	-0.5	17	30	70	50	2.82	2	3.48	3	BETA SCAN ONLY
8/30/95	04-019	ROOF DRAIN	18	-5	17	40	80	60	-0.13	2	3.48	3	BETA SCAN ONLY

Stastical Analysis	Beta Scan CPM Maximum	Beta Scan CPM Average	Removable Alpha DPM per 100cm2	Removable Beta DPM per 100cm2
Number of Samples	42	42	41	41
Minimum	40.00	20.00	-1.61	-3.21
Maximum	150.00	90.00	2.82	27.45
Average	79.76	47.02	-0.22	1.82
Standard Deviation	27.89	16.12	1.18	5.53