Rancho Seco

Final Status Survey Summary Report

November 4, 2007

Aux. Bldg (-) 20' El, Rm 45, NE Corridor

Survey Unit F8130631

Prepared By: D. Anderson Date: 11/4/2007

FSS Engineer

Reviewed By: [signature] Date: 11/5/07

Lead FSS Engineer

Approved By: [signature] Date: 11-12-07

Dismantlement Superintendent, Radiological

FINAL STATUS SURVEY SUMMARY REPORT

Survey Unit:

F8130631, Aux. Bldg (-) 20' El, Rm 45, NE Corridor

Survey Unit Description:

Operating History: The reinforced concrete structure contained the RadWaste processing and supporting systems. The building contained six main elevations. Residual radioactive material was known to be present on all levels of the interior of the building. Operating records and the HSA document several events with the potential for a release of radioactivity inside this structure. One report documented contamination of the auxiliary building roof. The roof was later replaced.

Site Characterization: Direct measurements were made of each of the interior elevation surfaces as well as the exterior surfaces of the structure. These measurements confirmed the presence of plant-derived radionuclides. Direct measurements on the –47' elevation showed a mean gross activity level of 320,071 dpm/100 cm^2 and a maximum value of 5,720,000 dpm/100 cm^2. Direct measurements on the –29' elevation showed a mean gross activity level of 544,756 dpm/100 cm^2 and a maximum value of 11,370,000 dpm/100 cm^2. Direct measurements on the –20' elevation showed a mean gross activity level of 247,831 dpm/100 cm^2 and a maximum value of 10,080,000 dpm/100 cm^2. Direct measurements on the grade elevation showed a mean gross activity level of 373,758 dpm/100 cm^2 and a maximum value of 5,800,000 dpm/100 cm^2. Direct measurements on the +20' elevation showed a mean gross activity level of 85,408 dpm/100 cm^2 and a maximum value of 1,900,000 dpm/100 cm^2. Direct measurements on the +40' elevation showed a mean gross activity level of 3,288 dpm/100 cm^2 and a maximum value of 24,781 dpm/100 cm^2. Direct measurements on the building exterior, including the mezzanine roof, showed a mean gross activity level of 1,897 dpm/100 cm^2 and a maximum value of 2,990 dpm/100 cm^2. (The roof had been replaced prior to the classification survey.) Based on the classification procedure (DSIP-0020) and levels of gross activity reported, the interior of the auxiliary building was determined to be a Class 1, 2 area and the exterior was a Class 2,3.

HSA Events: HSA Report pg. 63.

Survey Unit Design Information:

The Survey Unit Design Parameters are presented in Table 1 below. The survey unit and measurement locations are depicted on the maps in Attachment 1. Direct measurement locations were determined using a random-start, fixed grid pattern and 262.5 m^2 were scanned for 100% coverage. Samples of removable contamination were collected at each direct measurement location. The instrumentation used for the survey along with the MDC values are listed in Tables 2-1 and 2-2 in Attachment 2.

Table 1. Survey Unit Design Parameters

Survey Design Parameter	Value	Comment
Survey Area:	F813	Aux. Bldg (-) 20' El, Rm 45, NE Corridor
Survey Unit:	0631	Structure Surface
Class:	1	LTP Table 5-4
SU Area (m^2)**:**	262.5	
Evaluator:	D. Anderson	
DCGL (dpm/100 cm^2)**:**	43,000	Gross Activity DCGL
Area Factor:	3.5	Class 1
Design DCGLemc (dpm/100 cm^2)**:**	141,900	Class 1
LBGR (dpm/100 cm^2)**:**	21,500	Default = 50% DCGL
Design Sigma (dpm/100 cm^2)**:**	12,035	
Type I Error:	0.05	
Type II Error:	0.05	
Predominant Nuclide:	Cs-137	Used Co-60 area factor as conservative measure
Sample Area (m^2)**:**	6.9	Class 1
Scan Area (m^2)**:**	262.5	
Scan Coverage (%):	100%	Class 1
$Z_{1-\alpha}$ **:**	1.645	
$Z_{1-\beta}$ **:**	1.645	
Sign P:	0.955435	
Calculated Relative Shift:	1.7	
Relative Shift Used:	1.7	Uses 3.0 if Relative Shift is >3
N-Value:	14	
Design N-Value + 20%:	17	NUREG-1575 Table 5-5
Design Min Samples N:	38	Class 1
Grid Spacing L:	2.6	Class 1

Survey Results:

A total of 43 direct measurements were made in F8130631. The results including mean, median, standard deviation and range are shown in Table 2. All direct measurements were less than the DCGL. Six scan measurements indicated areas of elevated activity. Scan activity ranged from 4,434 to 129,800 dpm/100 cm^2 for floor, wall, ceiling and juncture surfaces, based on a surveyor efficiency of 0.5 and no background subtracted. Samples for removable surface activity were all less than 10% of the DCGL as shown in Table 3. Removable surface activity samples were counted for alpha activity and none was detected at the MDC shown in Table 2-1 of Attachment 2.

Table 2. Direct Measurement Results

Measurement ID	Gross Activity (dpm/100 cm^2)
F8130631-C0001BD	3,216
F8130631-C0002BD	2,236
F8130631-C0003BD	2,884
F8130631-C0004BD	3,413
F8130631-C0005BD	2,173
F8130631-C0006BD	2,220
F8130631-C0007BD	3,660
F8130631-C0008BD	4,045
F8130631-C0009BD	2,345
F8130631-C0010BD	3,715
F8130631-C0011BD	2,028
F8130631-C0012BD	4,597
F8130631-C0013BD	3,230
F8130631-C0014BD	3,671
F8130631-C0015BD	3,527
F8130631-C0016BD	3,020
F8130631-C0017BD	3,935
F8130631-C0018BD	5,919
F8130631-C0019BD	1,712
F8130631-C0020BD	3,450
F8130631-C0021BD	3,560
F8130631-C0022BD	4,960
F8130631-C0023BD	2,028
F8130631-C0024BD	3,604
F8130631-C0025BD	1,758
F8130631-C0026BD	3,869
F8130631-C0027BD	1,375
F8130631-C0028BD	3,417
F8130631-C0029BD	1,561
F8130631-C0030BD	3,197
F8130631-C0031BD	3,020
F8130631-C0032BD	3,329
F8130631-C0033BD	3,604
F8130631-C0034BD	3,263
F8130631-C0035BD	3,946
F8130631-C0036BD	3,748
F8130631-C0037BD	3,527
F8130631-C0038BD	3,825
F8130631-C0039BD	3,638
F8130631-C0040BD	3,428
F8130631-C0041BD	4,112
F8130631-C0042BD	6,790
F8130631-C0043BD	4,255
Mean:	3,368
Median:	3,450
Standard Deviation:	1,066
Range:	1,375 – 6,790

Table 3. Removable Surface Activity Results

Measurement ID	Surface Beta Activity (dpm/100 cm^2)
F8130631C0001SM	3.58
F8130631C0002SM	6.14
F8130631C0003SM	7.42
F8130631C0004SM	9.98
F8130631C0005SM	4.86
F8130631C0006SM	1.01
F8130631C0007SM	8.7
F8130631C0008SM	3.58
F8130631C0009SM	7.42
F8130631C0010SM	13.83
F8130631C0011SM	-0.27
F8130631C0012SM	20.24
F8130631C0013SM	4.86
F8130631C0014SM	7.42
F8130631C0015SM	3.58
F8130631C0016SM	15.11
F8130631C0017SM	2.29
F8130631C0018SM	103.56
F8130631C0019SM	3.58
F8130631C0020SM	1.01
F8130631C0021SM	4.86
F8130631C0022SM	2.29
F8130631C0023SM	2.29
F8130631C0024SM	6.14
F8130631C0025SM	2.29
F8130631C0026SM	11.27
F8130631C0027SM	8.7
F8130631C0028SM	2.29
F8130631C0029SM	-1.55
F8130631C0030SM	4.86
F8130631C0031SM	2.29
F8130631C0032SM	3.58
F8130631C0033SM	6.14
F8130631C0034SM	4.86
F8130631C0035SM	2.29
F8130631C0036SM	59.98
F8130631C0037SM	-1.55
F8130631C0038SM	29.21
F8130631C0039SM	1.01
F8130631C0040SM	-0.27
F8130631C0041SM	1.01
F8130631C0042SM	3.58
F8130631C0043SM	8.7
Mean:	9.12
Median:	4.86
Standard Deviation:	17.86
Range:	-1.55 to 103.56

Survey Unit Data Assessment:

The survey design required 43 direct measurements for the Sign Test. The critical value and the results of the Sign Test are presented in Table 4. The sample mean and median values were less than the DCGL. The sample standard deviation was less than the design standard deviation so no additional samples were required.

Table 4. Data Assessment Results

Survey Results Parameter	Value	Comment
Material Background Used (dpm/100 cm²):	N/A	
Ambient Background Used (dpm/100 cm²):	N/A	Average Ambient BKG = 0
Actual Direct Measurements (N):	43	
Median (dpm/100 cm²):	3,450	
Mean (dpm/100 cm²):	3,368	
Direct Measurement Standard Deviation (dpm/100 cm²):	1,066	
Total Standard Deviation (dpm/100 cm²):	1,066	Based on samples and backgrounds.
Maximum (dpm/100 cm²):	6,790	
Material Type:	N/A	Background Subtract Not Applied
Sign Test Final N Value:	43	
S+ Value:	43	
Critical Value:	27	
Sufficient Samples Collected:	Yes	
Maximum Value < DCGL:	Yes	
Median Value < DCGL:	Yes	
Mean Value < DCGL:	Yes	
Maximum Value < DCGLemc:	Yes	Class 1
Total Standard Deviation <= Sigma:	Yes	
Pass the Sign Test?	Yes	
Reject the Null Hypothesis?	Yes	
Does the Survey Unit Pass All Criteria?	Yes	

Survey Unit Investigations and Results:

Six investigations (penetrations P0061, P0062, P0063, P0064, P0076 and P0068) were required for the scan measurements and the results are reported in Attachment 3. The EMC unity rule was not exceeded as shown in Table 3-1.

ALARA Statement:

As stated in Chapter 4 of the LTP, as long as the residual activity within the survey unit is less than the DCGL (i.e. the survey unit average activity is less than the DCGL and the EMC criterion has been met), the ALARA criterion has been met.

Changes in Initial Survey Unit Assumptions:

The survey unit was designed as a Class 1 structure survey and the sample results are consistent with that classification. The variability of the survey results was less than the characterization data used for survey design. Six potential areas of elevated activity were detected and evaluated as shown in Attachment 3. Therefore the EMC criterion was met.

Conclusion:

The FSS of this survey unit was properly designed as a Class 1 survey based on Table 5-4 of the LTP. The required number of direct measurements was made and the scan coverage met the requirement of Table 5-6 of the LTP. No direct measurements exceeded the DCGL of 43,000 dpm/100 cm^2 and none of the removable surface activity measurements exceeded 10% of the DCGL. Six investigations were required.

The direct measurement data support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and that the data quality objectives were met.

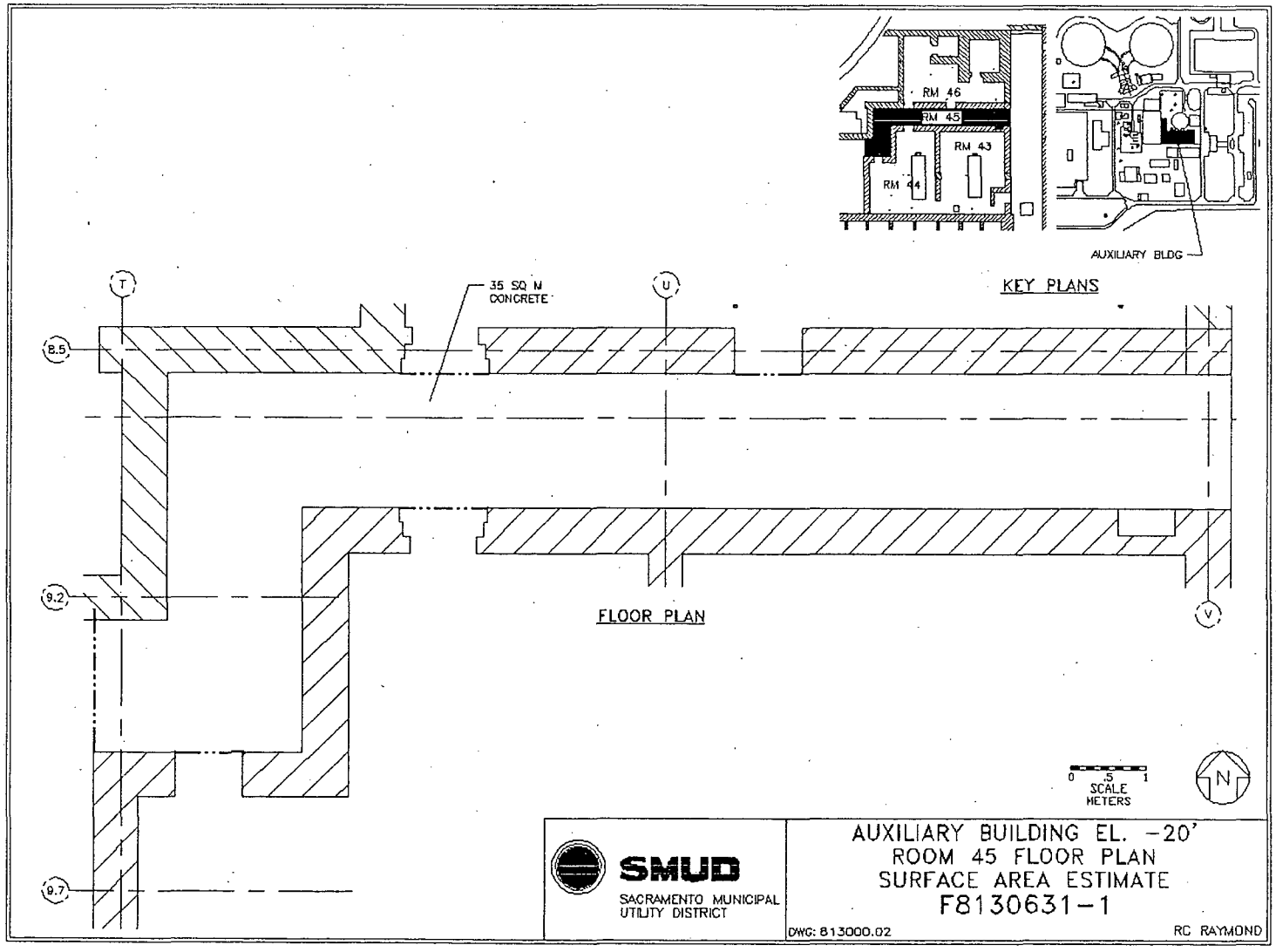
It is concluded that survey unit F8130631 meets the release criteria of 10CFR20.1402.

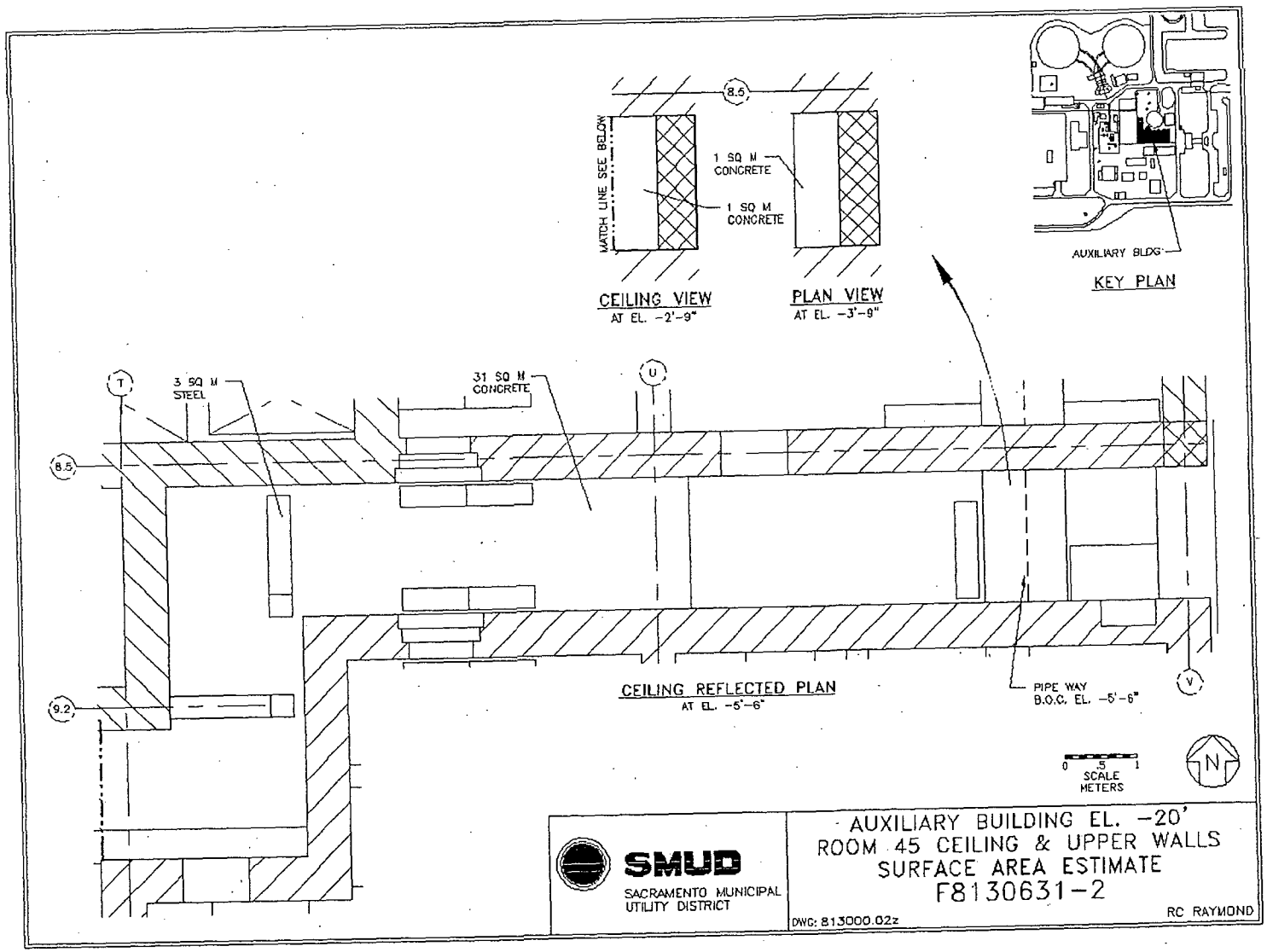
Attachment 1

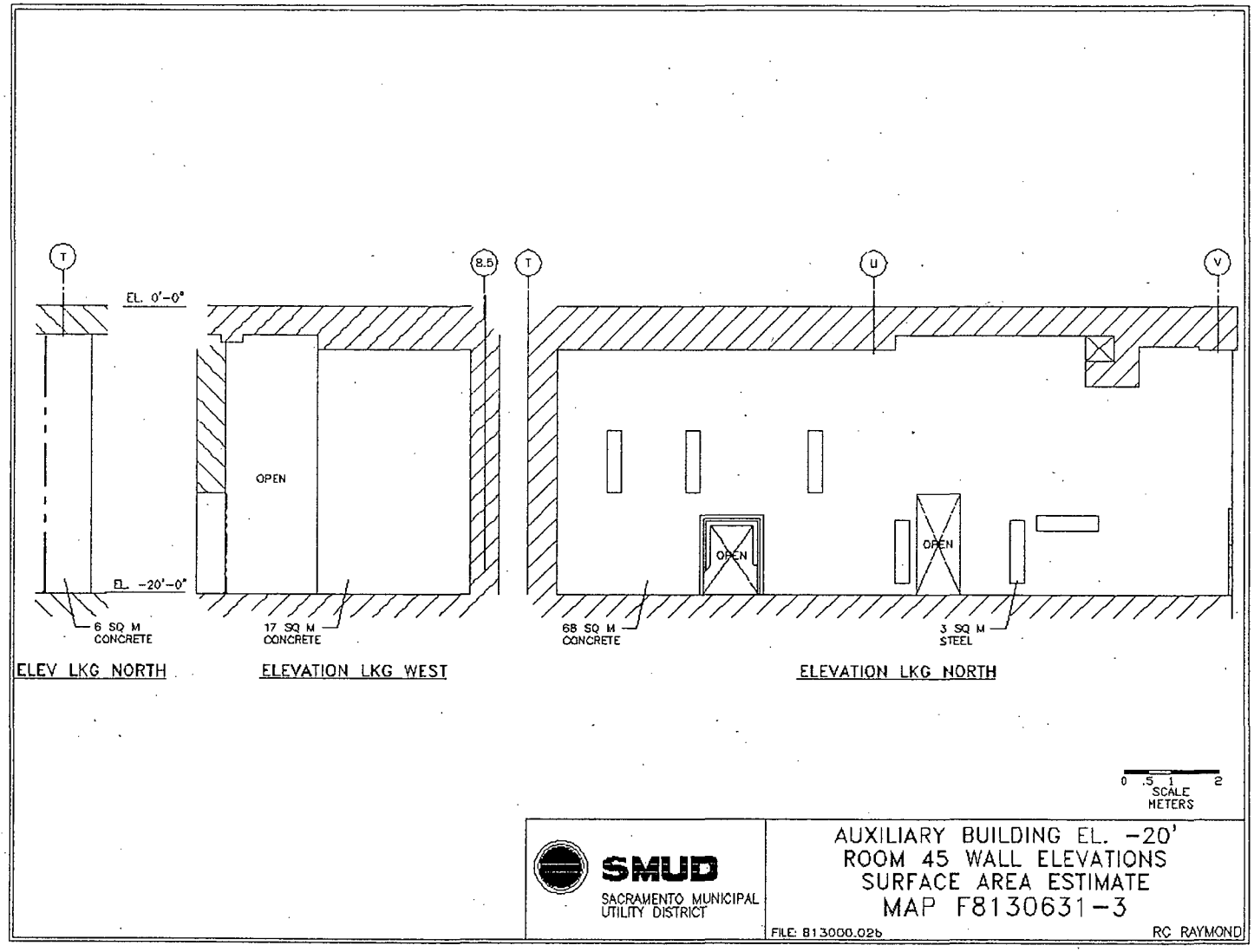
Maps

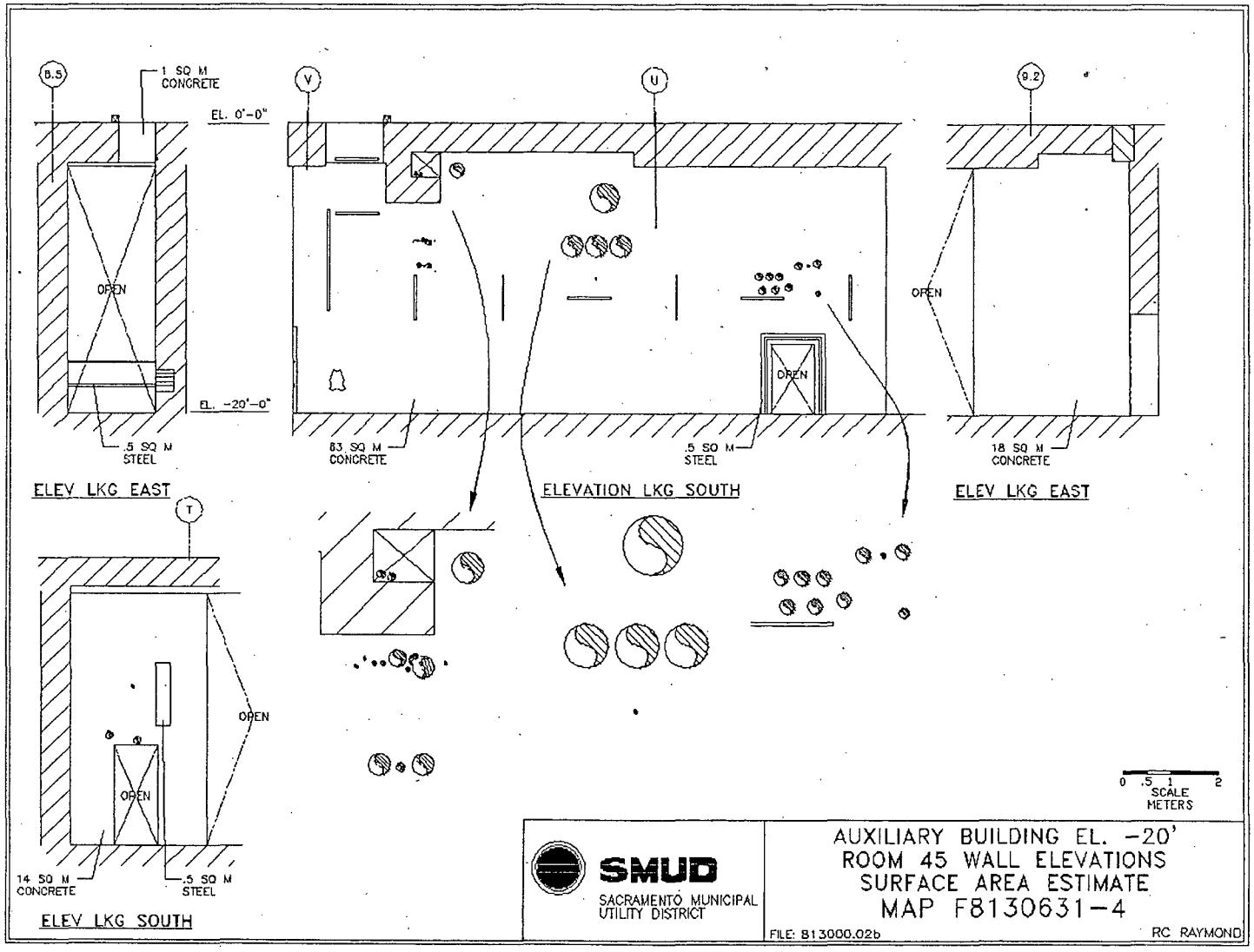
November 4, 2007

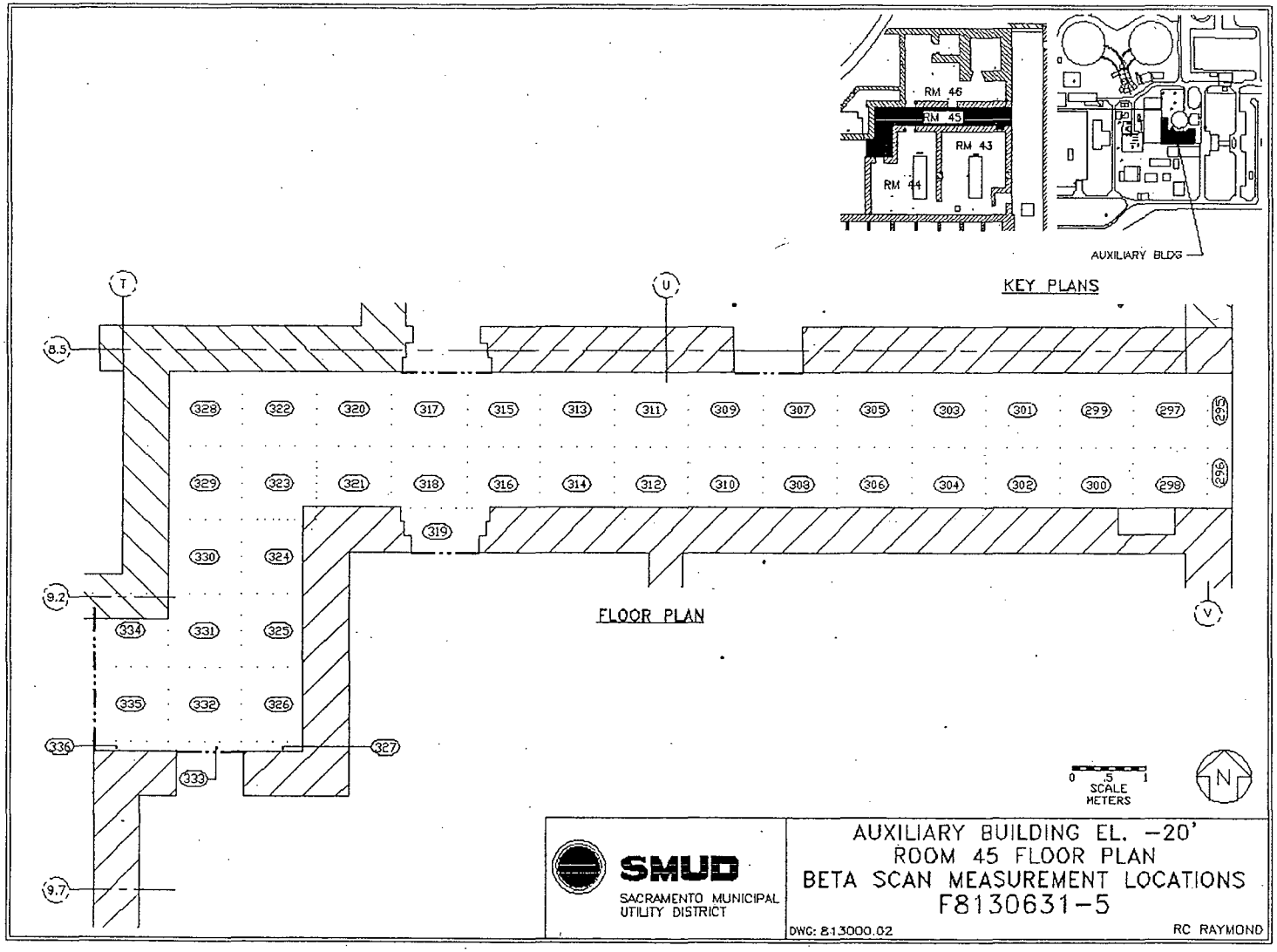
Survey Unit F8130631

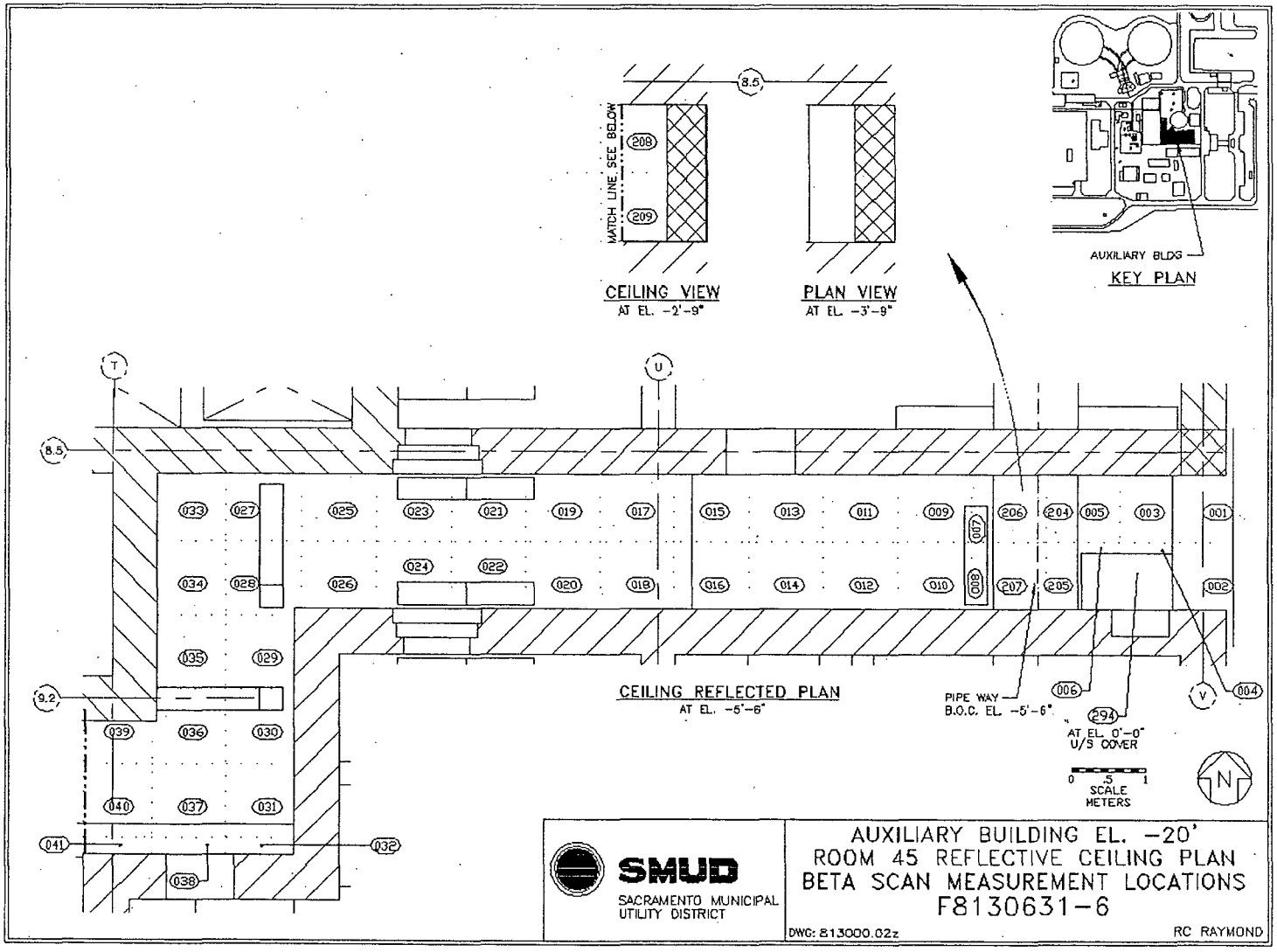

RM 46
RM 45
RM 43
RM 44
AUXILIARY BLDG
KEY PLANS
35 SQ M
CONCRETE
T
U
V
8.5
9.2
9.7
FLOOR PLAN
0 .5 1
SCALE
METERS
N
SMUD
SACRAMENTO MUNICIPAL
UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 FLOOR PLAN
SURFACE AREA ESTIMATE
F8130631-1
DWG: 813000.02
RC RAYMOND

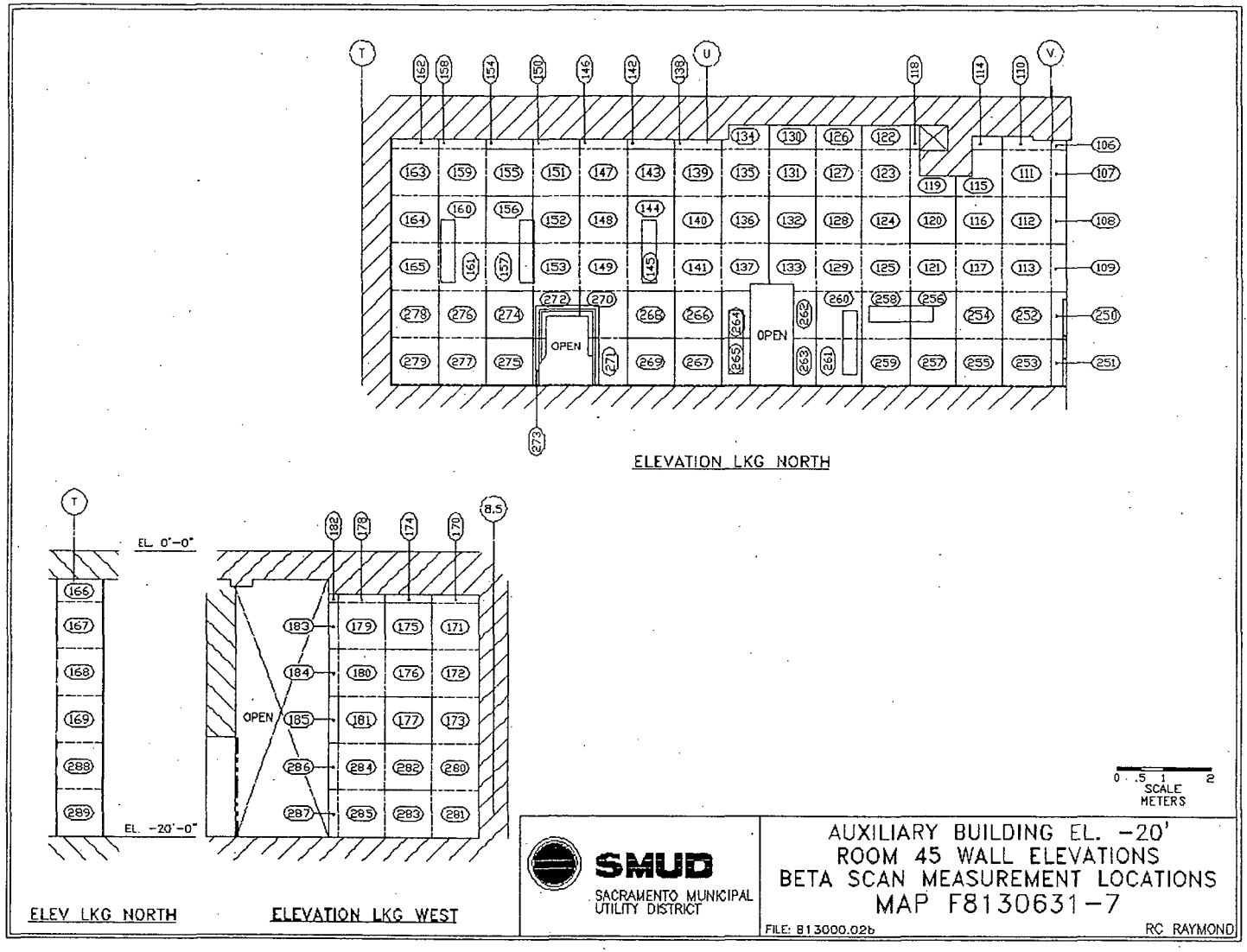

8.5
MATCH LINE SEE BELOW
1 SQ M CONCRETE
1 SQ M CONCRETE
CEILING VIEW
AT EL. -2'-9"
PLAN VIEW
AT EL. -3'-9"
AUXILIARY BLDG
KEY PLAN
T
3 SQ M STEEL
31 SQ M CONCRETE
U
8.5
9.2
CEILING REFLECTED PLAN
AT EL. -5'-6"
PIPE WAY
B.O.C. EL. -5'-6"
V
0 .5 1
SCALE METERS
N
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 CEILING & UPPER WALLS
SURFACE AREA ESTIMATE
F8130631-2
DWG: 813000.02z
RC RAYMOND

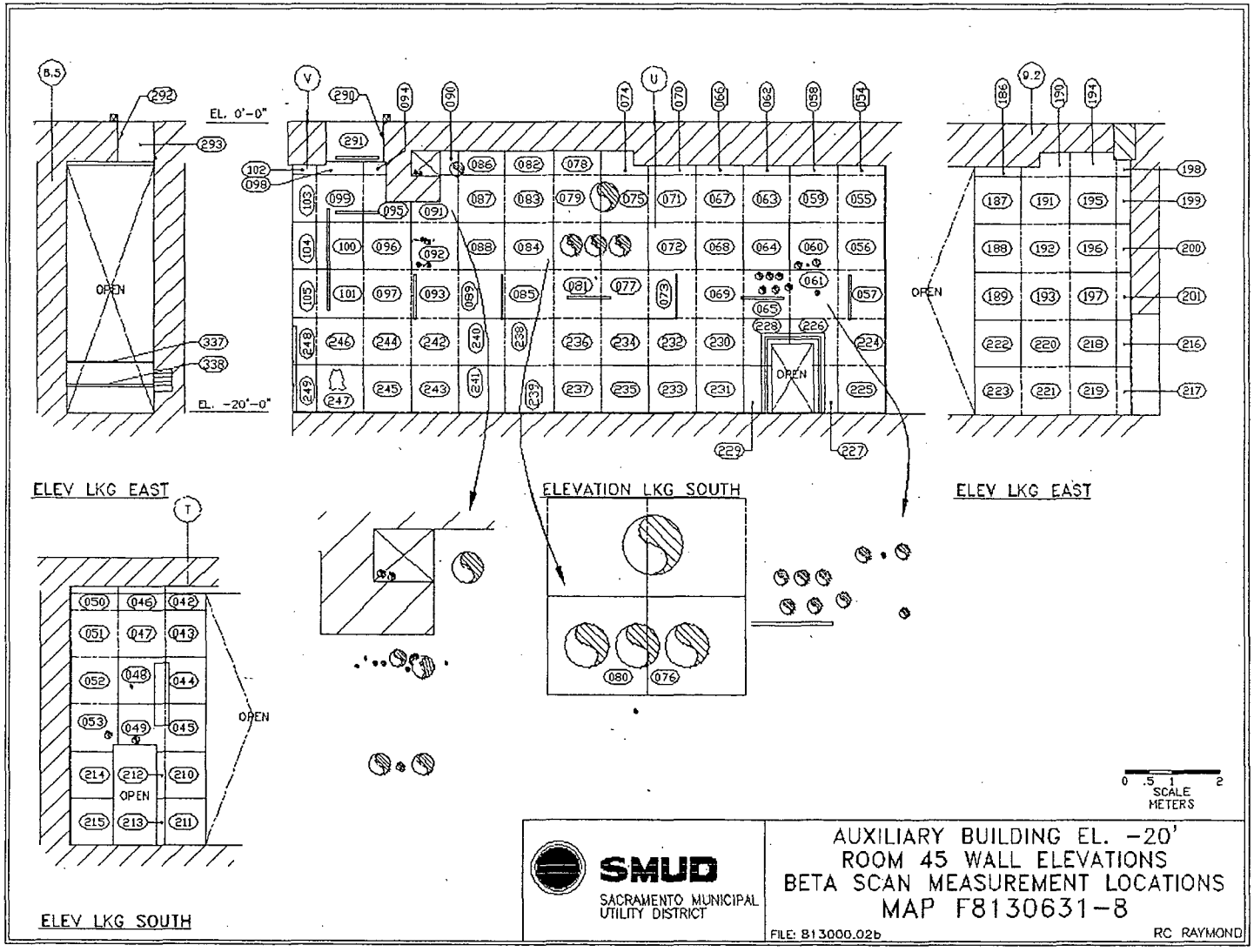

T
8.5
EL. 0'-0"
EL. -20'-0"
OPEN
6 SQ M CONCRETE
17 SQ M CONCRETE
ELEV LKG NORTH
ELEVATION LKG WEST
T
U
V
OPEN
OPEN
68 SQ M CONCRETE
3 SQ M STEEL
ELEVATION LKG NORTH
0 .5 1 2
SCALE METERS
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 WALL ELEVATIONS
SURFACE AREA ESTIMATE
MAP F8130631-3
FILE: 813000.026
RC RAYMOND

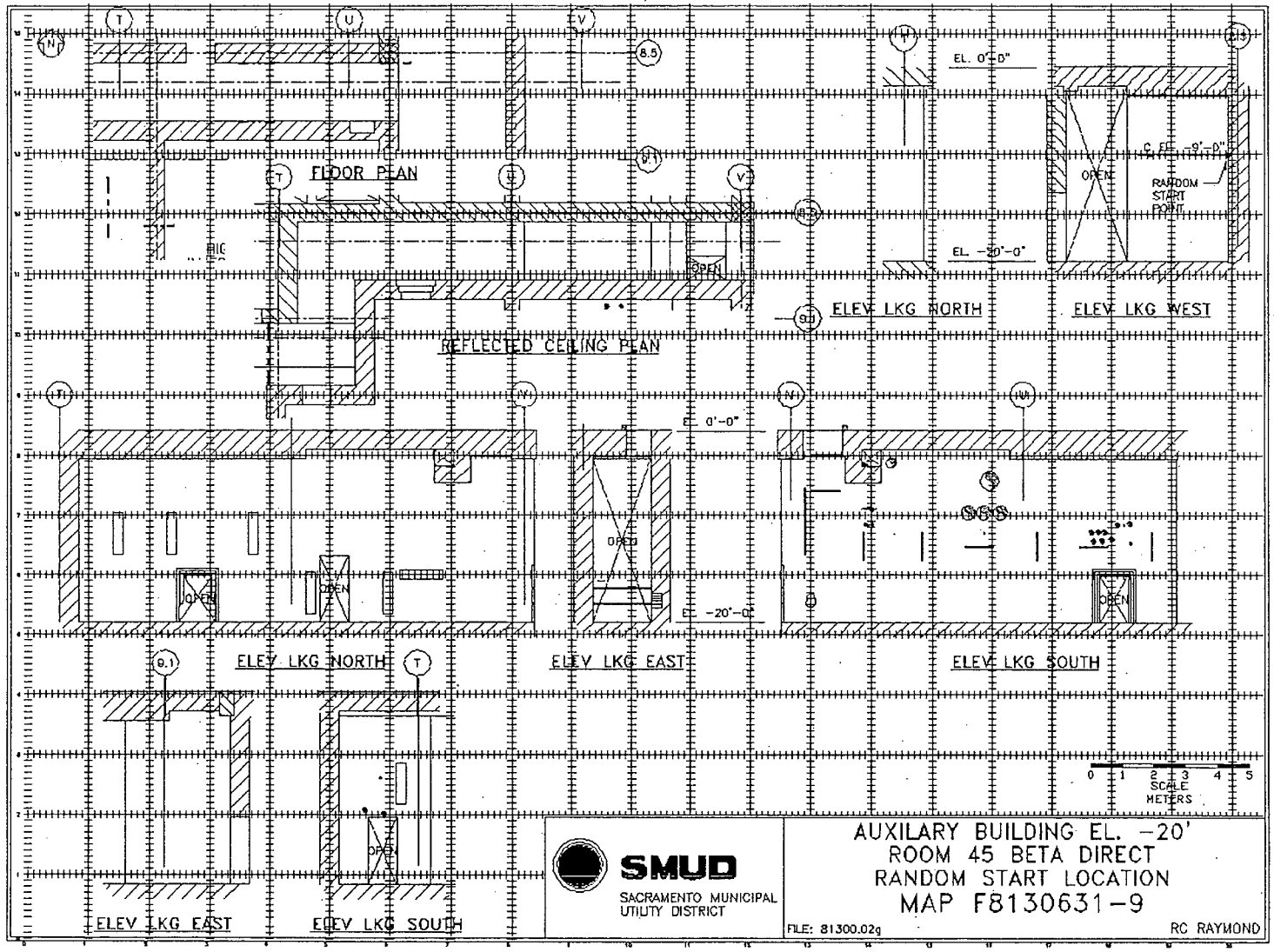

B.5
1 SQ M CONCRETE
EL. 0'-0"
OPEN
EL. -20'-0"
.5 SQ M STEEL
ELEV LKG EAST
V
U
83 SQ M CONCRETE
.5 SQ M STEEL
ELEVATION LKG SOUTH
9.2
OPEN
18 SQ M CONCRETE
ELEV LKG EAST
T
OPEN
OPEN
14 SQ M CONCRETE
.5 SQ M STEEL
ELEV LKG SOUTH
0 .5 1 2
SCALE METERS
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 WALL ELEVATIONS
SURFACE AREA ESTIMATE
MAP F8130631-4
FILE: B13000.02b
RC RAYMOND

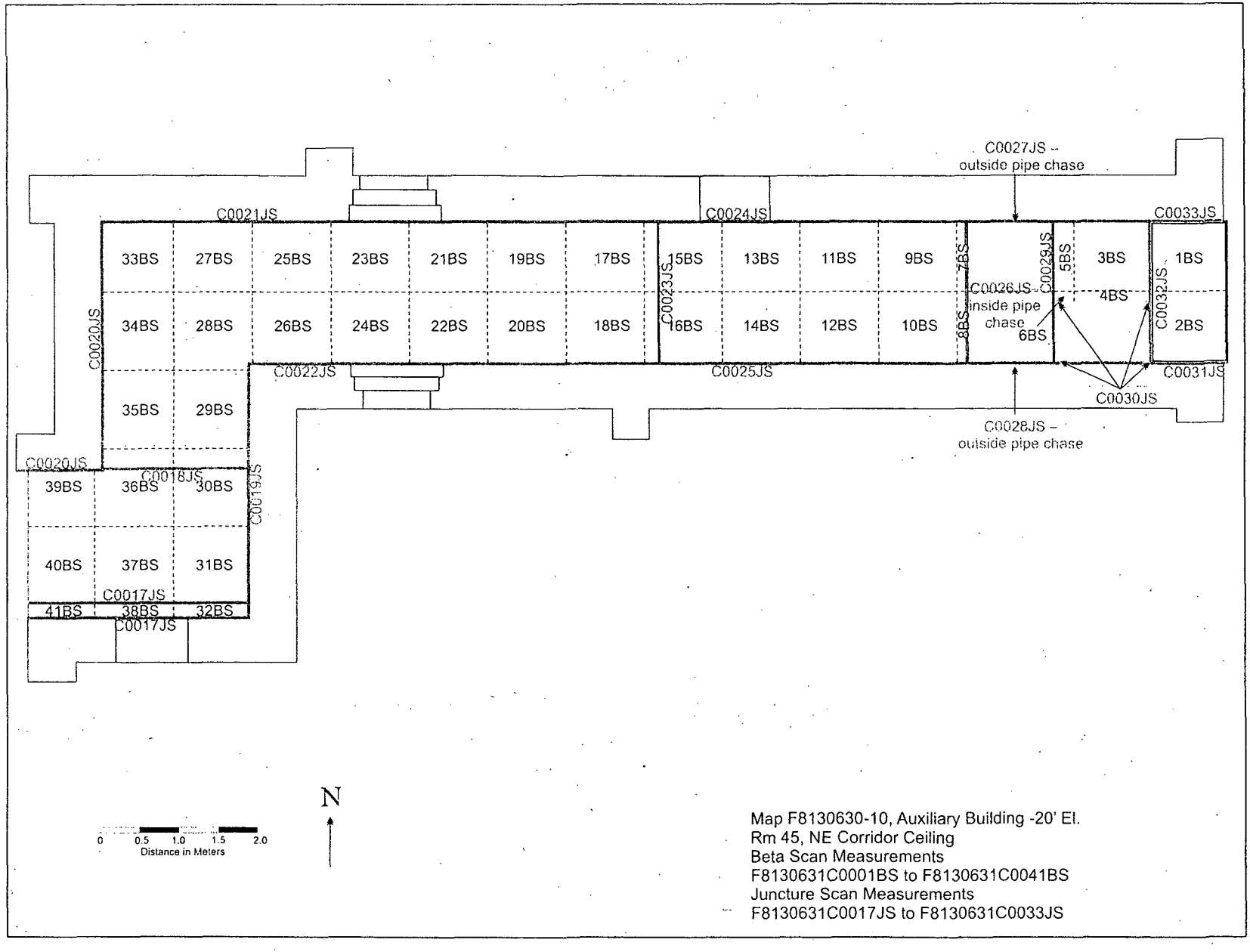

RM 46
RM 45
RM 43
RM 44
AUXILIARY BLDG
KEY PLANS
T
U
V
8.5
9.2
9.7
328 322 320 317 315 313 311 309 307 305 303 301 299 297
329 323 321 318 316 314 312 310 308 306 304 302 300 298
319
330 324
334 331 325
335 332 326
336 327
333
FLOOR PLAN
0 .5 1
SCALE METERS
N
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 FLOOR PLAN
BETA SCAN MEASUREMENT LOCATIONS
F8130631-5
DWG: 813000.02
RC RAYMOND

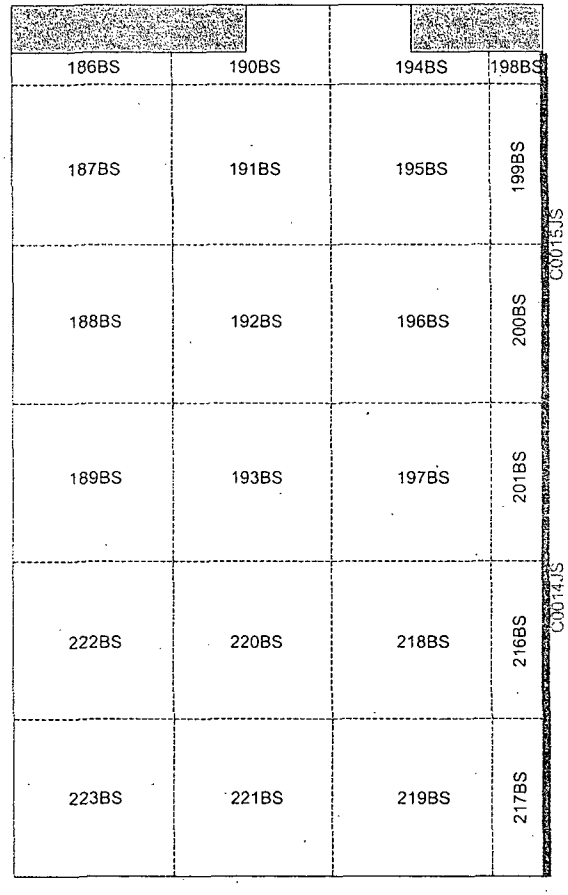

MATCH LINE SEE BELOW
208
209
8.5
CEILING VIEW
AT EL. -2'-9"
PLAN VIEW
AT EL. -3'-9"
AUXILIARY BLDG
KEY PLAN
T
U
V
8.5
9.2
033 027 025 023 021 019 017 015 013 011 009 007 206 204 005 003 001
034 028 026 024 022 020 018 016 014 012 010 008 207 205 002
035 029
039 036 030
040 037 031
041 032
038
CEILING REFLECTED PLAN
AT EL. -5'-6"
PIPE WAY
B.O.C. EL. -5'-6"
006
294
AT EL. 0'-0"
U/S COVER
004
0 .5 1
SCALE
METERS
N
SMUD
SACRAMENTO MUNICIPAL
UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 REFLECTIVE CEILING PLAN
BETA SCAN MEASUREMENT LOCATIONS
F8130631-6
DWG: 813000.02z
RC RAYMOND


T
U
V
OPEN
OPEN
ELEVATION LKG NORTH
EL. 0'-0"
EL. -20'-0"
OPEN
8.5
ELEV LKG NORTH
ELEVATION LKG WEST
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
SCALE METERS
AUXILIARY BUILDING EL. -20'
ROOM 45 WALL ELEVATIONS
BETA SCAN MEASUREMENT LOCATIONS
MAP F8130631-7
FILE: B13000.02b
RC RAYMOND

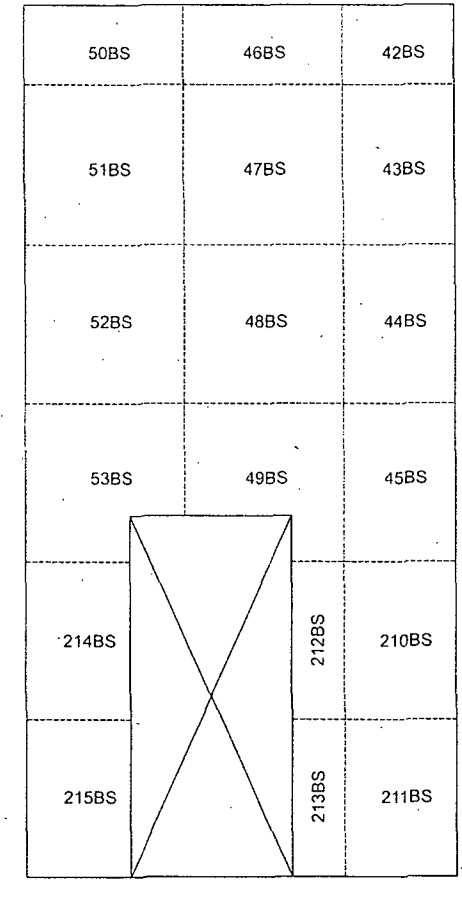

ELEV LKG EAST
ELEVATION LKG SOUTH
ELEV LKG EAST
ELEV LKG SOUTH
EL. 0'-0"
EL. -20'-0"
OPEN
SCALE METERS
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUXILIARY BUILDING EL. -20'
ROOM 45 WALL ELEVATIONS
BETA SCAN MEASUREMENT LOCATIONS
MAP F8130631-8
FILE: 813000.02b
RC RAYMOND


FLOOR PLAN
REFLECTED CEILING PLAN
ELEV LKG NORTH
ELEV LKG WEST
ELEV LKG NORTH
ELEV LKG EAST
ELEV LKG SOUTH
ELEV LKG EAST
ELEV LKG SOUTH
EL. 0'-0"
EL. -20'-0"
OPEN
RANDOM START POINT
SCALE METERS
SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
AUXILARY BUILDING EL. -20'
ROOM 45 BETA DIRECT
RANDOM START LOCATION
MAP F8130631-9
FILE: 81300.02g
RC RAYMOND

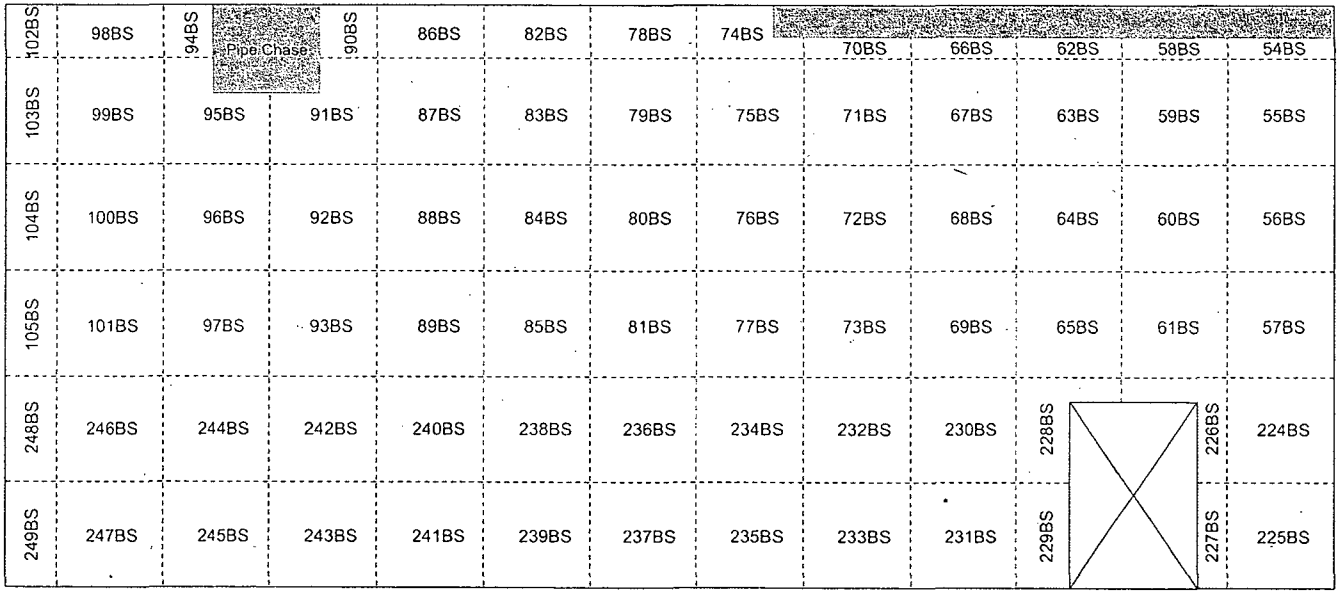

C0027JS –
outside pipe chase
C0021JS
C0024JS
C0033JS
33BS
27BS
25BS
23BS
21BS
19BS
17BS
15BS
13BS
11BS
9BS
7BS
C0029JS
5BS
3BS
1BS
C0023JS
C0026JS –
inside pipe
chase
6BS
4BS
C0032JS
34BS
28BS
26BS
24BS
22BS
20BS
18BS
16BS
14BS
12BS
10BS
8BS
2BS
C0020JS
C0022JS
C0025JS
C0031JS
C0030JS
35BS
29BS
C0028JS –
outside pipe chase
C0020JS
C0018JS
C0019JS
39BS
36BS
30BS
40BS
37BS
31BS
C0017JS
41BS
38BS
32BS
C0017JS
0
0.5
1.0
1.5
2.0
Distance in Meters
N
Map F8130630-10, Auxiliary Building -20' El.
Rm 45, NE Corridor Ceiling
Beta Scan Measurements
F8130631C0001BS to F8130631C0041BS
Juncture Scan Measurements
F8130631C0017JS to F8130631C0033JS

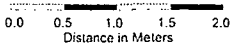


Map F8130630-11, Auxiliary Building -20' El.
Rm 45, NE Corridor East Wall
Beta Scan Measurements
F8130631C0186BS to F8130631C0201BS and
F8130631C0216BS to F8130631C0223BS
Juncture Scan Measurements
F8130631C0014JS to F8130631C0015JS

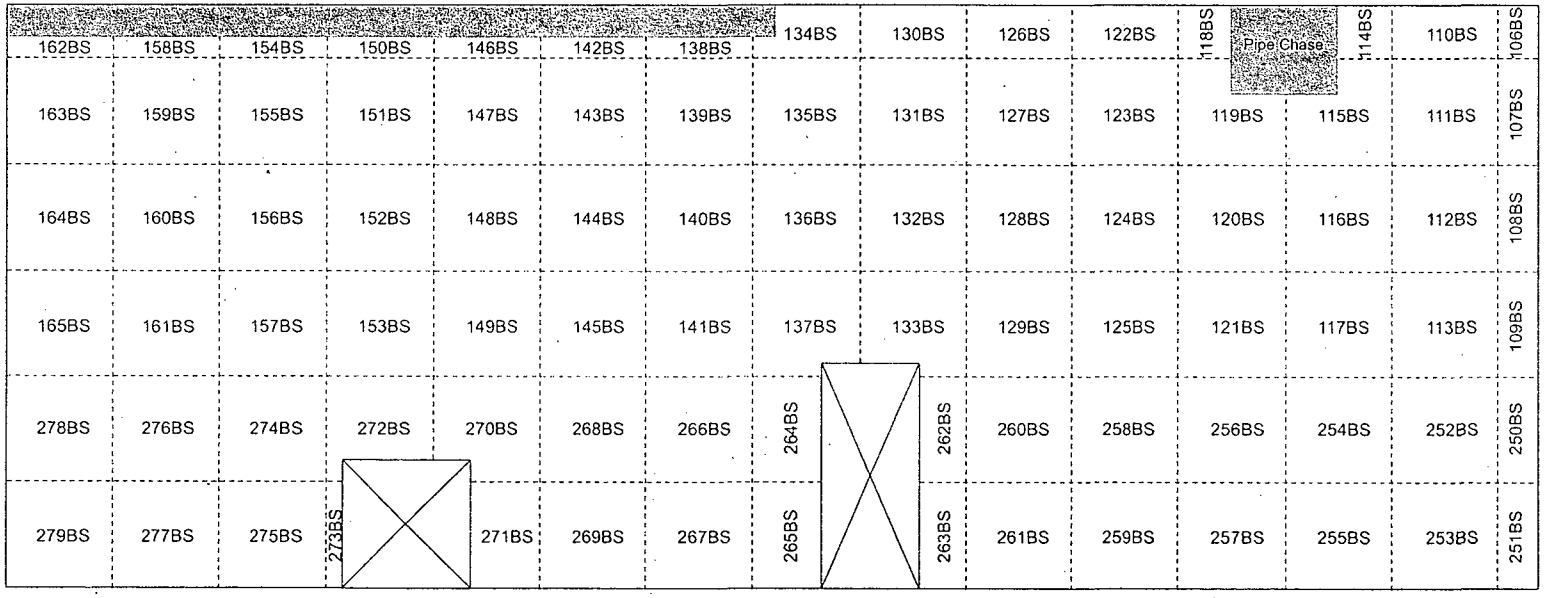


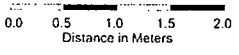
Map F8130630-11, Auxiliary Building -20' El.
Rm 45, NE Corridor South Wall 2
Beta Scan Measurements
F8130631C0042BS to F8130631C0053BS and
F8130631C0210BS to F8130631C0215BS



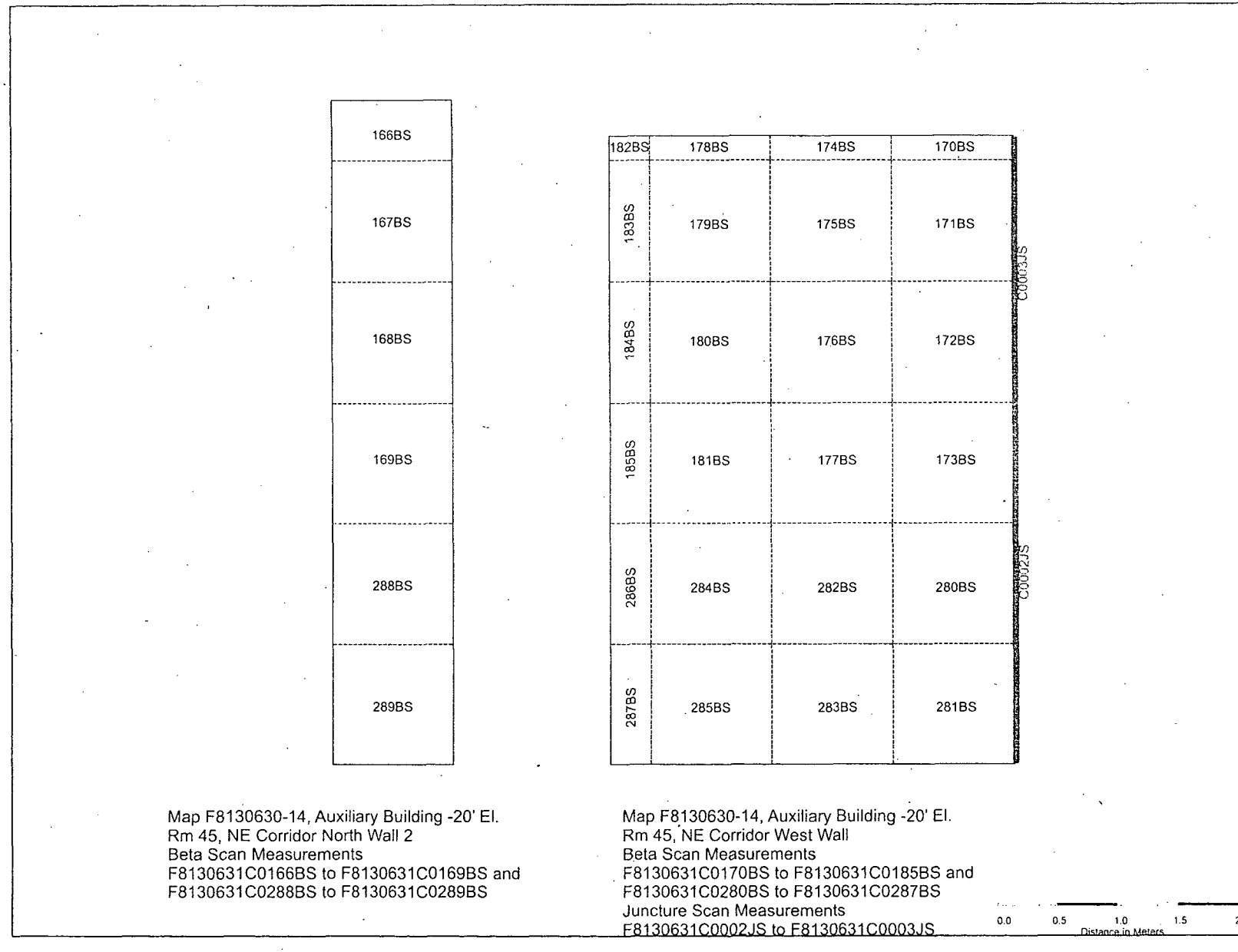


Map F8130630-12, Auxiliary Building -20' El.
Rm 45, NE Corridor South Wall 1
Beta Scan Measurements
F8130631C0054BS to F8130631C0105BS and
F8130631C0224BS to F8130631C0249BS



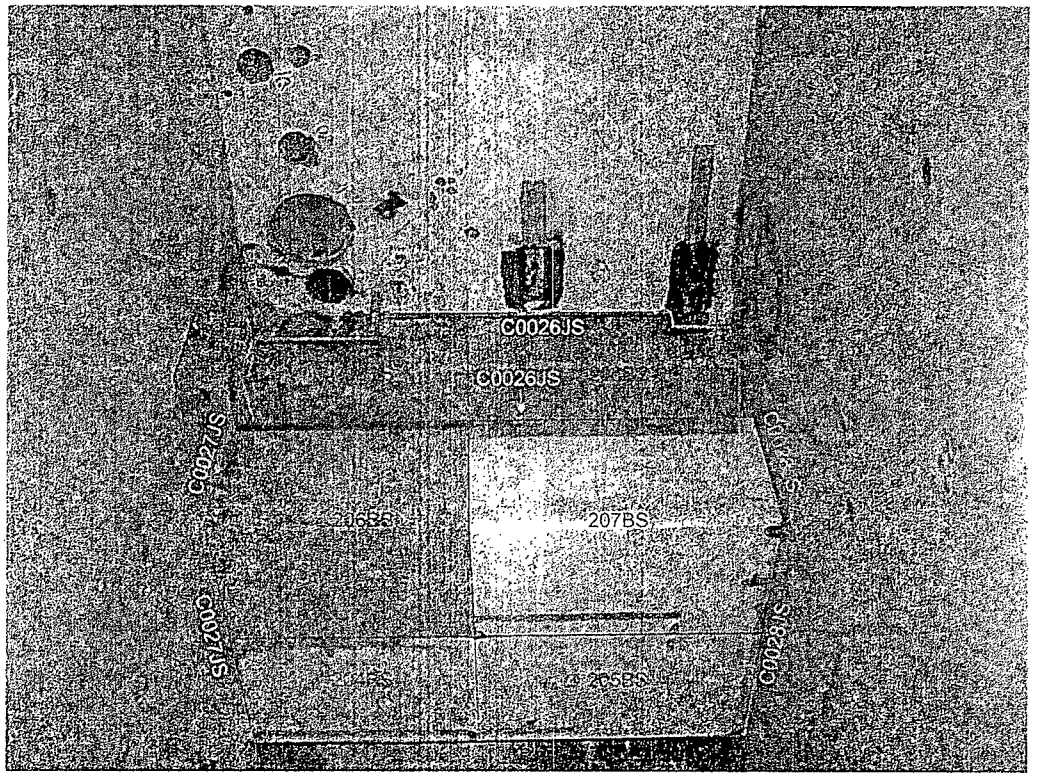


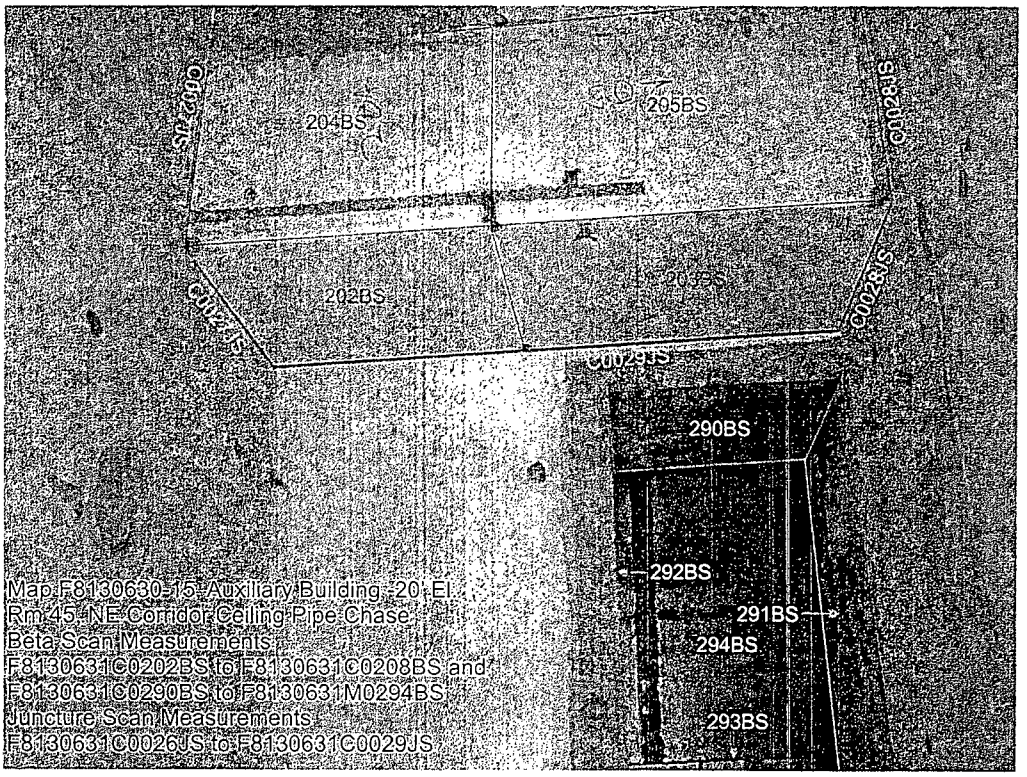
Map F8130630-13, Auxiliary Building -20' El.
Rm 45, NE Corridor North Wall 1
Beta Scan Measurements
F8130631C0106BS to F8130631C0165BS and
F8130631C0250BS to F8130631C0279BS



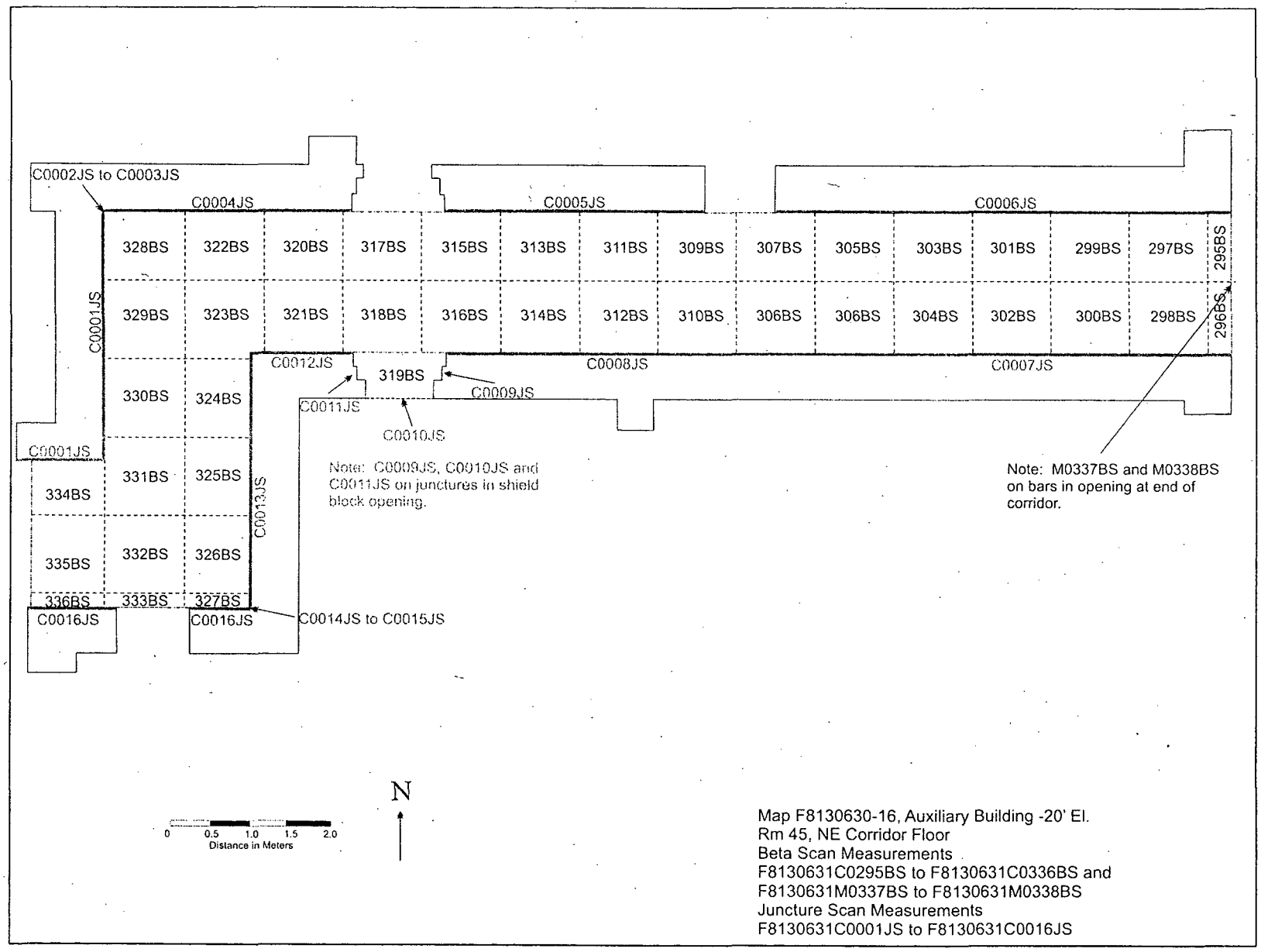
Map F8130630-14, Auxiliary Building -20' El.
Rm 45, NE Corridor North Wall 2
Beta Scan Measurements
F8130631C0166BS to F8130631C0169BS and
F8130631C0288BS to F8130631C0289BS

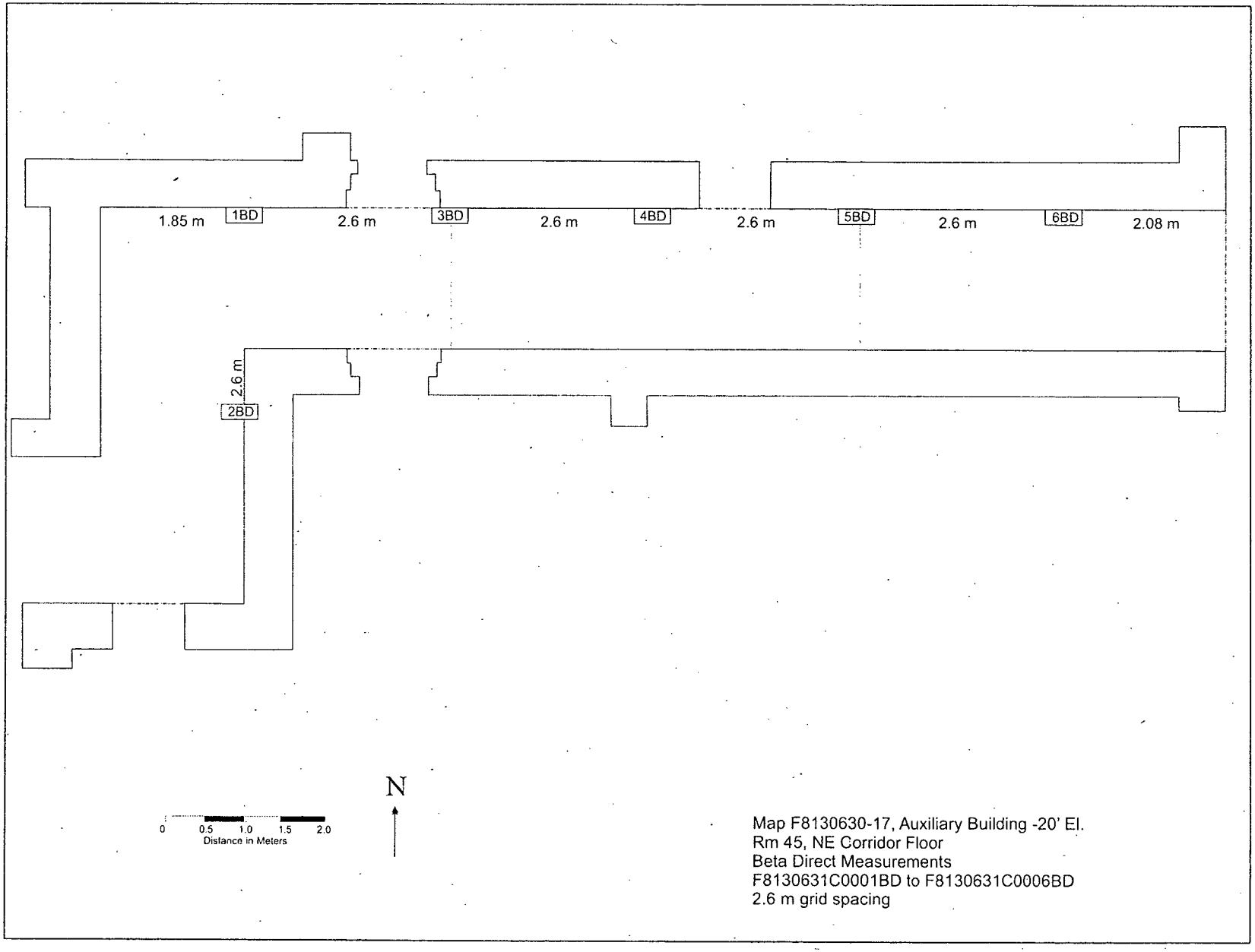
Map F8130630-14, Auxiliary Building -20' El.
Rm 45, NE Corridor West Wall
Beta Scan Measurements
F8130631C0170BS to F8130631C0185BS and
F8130631C0280BS to F8130631C0287BS
Juncture Scan Measurements
F8130631C0002JS to F8130631C0003JS

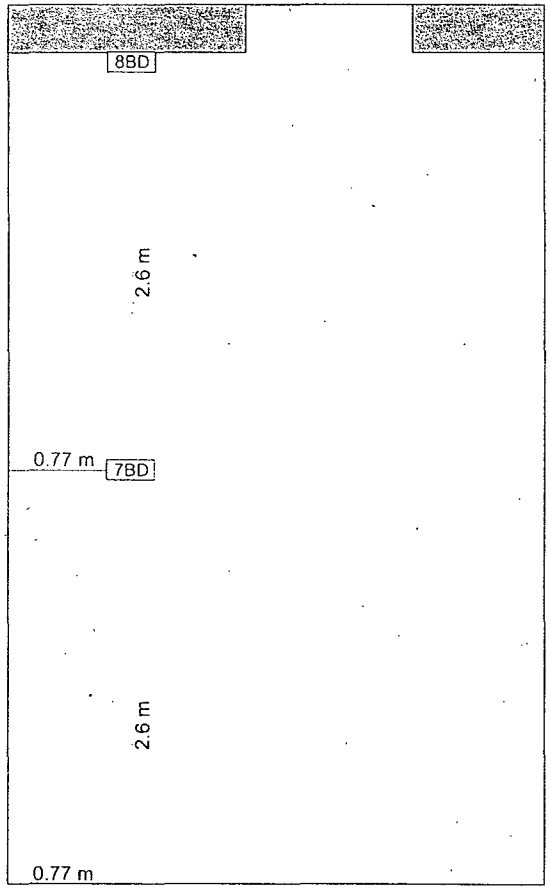




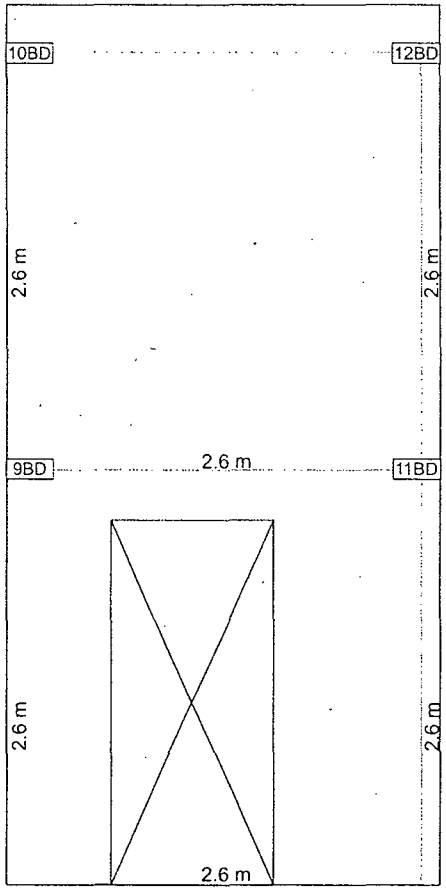
Map F8130630-15 Auxiliary Building -20 El.
Rm 45 NE Corridor Ceiling Pipe Chase
Beta Scan Measurements
F8130631C0202BS to F8130631C0208BS and
F8130631C0290BS to F8130631M0294BS
Juncture Scan Measurements
F8130631C0026JS to F8130631C0029JS


C0002JS to C0003JS
C0004JS
C0005JS
C0006JS
328BS
322BS
320BS
317BS
315BS
313BS
311BS
309BS
307BS
305BS
303BS
301BS
299BS
297BS
295BS
329BS
323BS
321BS
318BS
316BS
314BS
312BS
310BS
306BS
306BS
304BS
302BS
300BS
298BS
296BS
C0001JS
C0012JS
319BS
C0008JS
C0007JS
330BS
324BS
C0009JS
C0011JS
C0010JS
C0001JS
331BS
325BS
334BS
C0013JS
Note: C0009JS, C0010JS and C0011JS on junctures in shield block opening.
Note: M0337BS and M0338BS on bars in opening at end of corridor.
335BS
332BS
326BS
336BS
333BS
327BS
C0016JS
C0016JS
C0014JS to C0015JS
0
0.5
1.0
1.5
2.0
Distance in Meters
N
Map F8130630-16, Auxiliary Building -20' El.
Rm 45, NE Corridor Floor
Beta Scan Measurements
F8130631C0295BS to F8130631C0336BS and
F8130631M0337BS to F8130631M0338BS
Juncture Scan Measurements
F8130631C0001JS to F8130631C0016JS

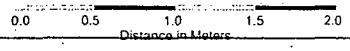

1.85 m
1BD
2.6 m
3BD
2.6 m
4BD
2.6 m
5BD
2.6 m
6BD
2.08 m
2.6 m
2BD
N
0
0.5
1.0
1.5
2.0
Distance in Meters
Map F8130630-17, Auxiliary Building -20' El.
Rm 45, NE Corridor Floor
Beta Direct Measurements
F8130631C0001BD to F8130631C0006BD
2.6 m grid spacing



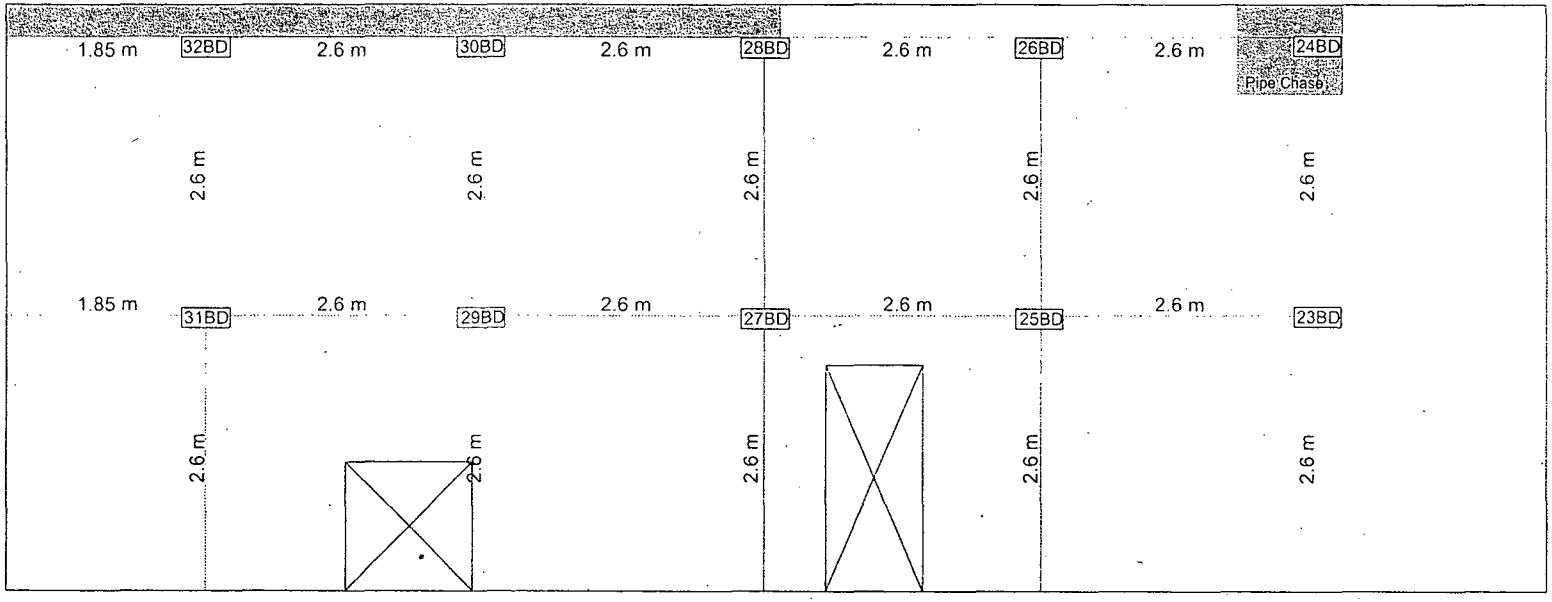
Map F8130630-18, Auxiliary Building -20' El.
Rm 45, NE Corridor East Wall
Beta Direct Measurements
F8130631C0007BD to F8130631C0008BD



Map F8130630-18, Auxiliary Building -20' El.
Rm 45, NE Corridor South Wall 2
Beta Direct Measurements
F8130631C0009BD to F8130631C0012BD



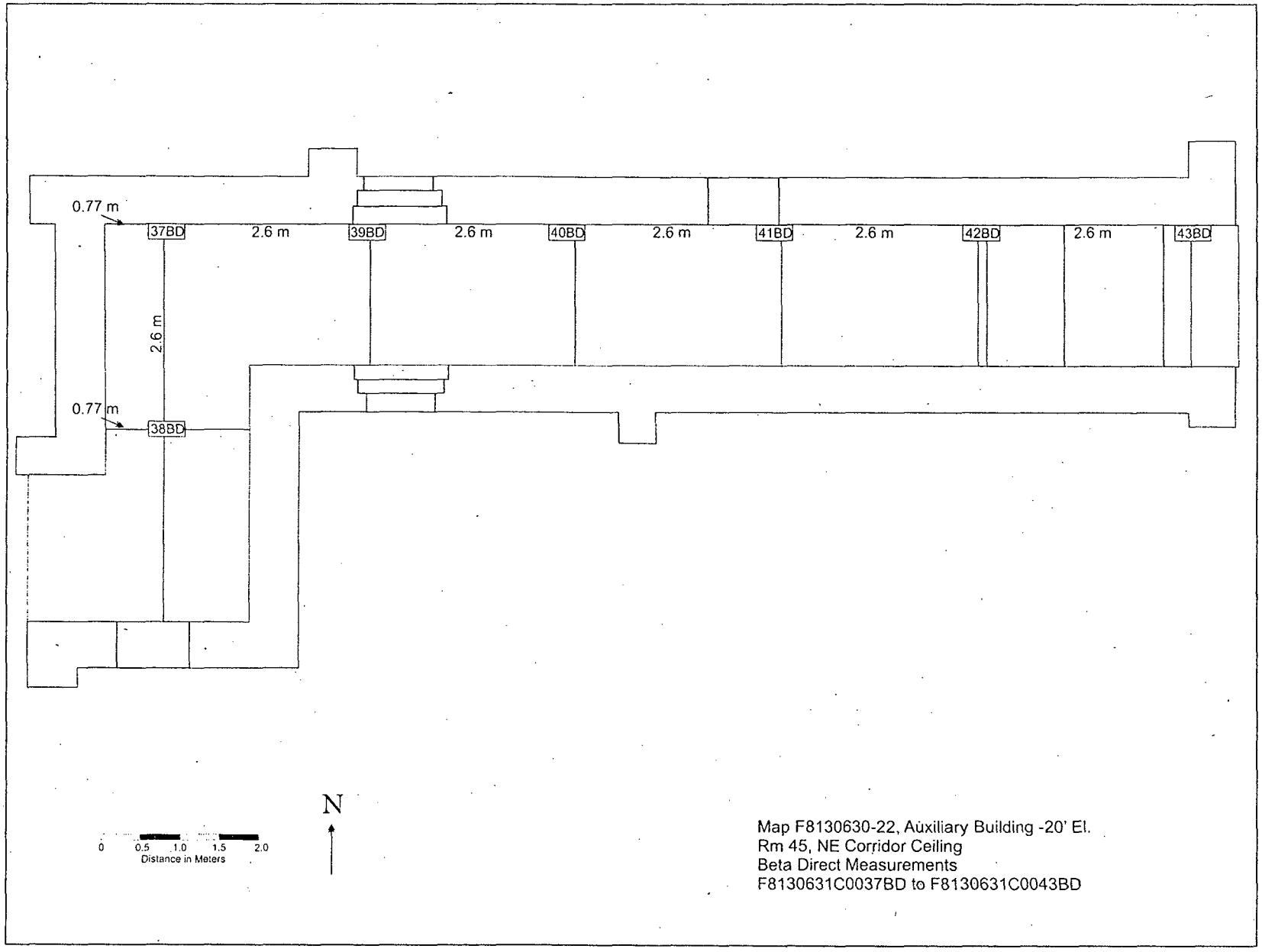
Map F8130630-19, Auxiliary Building -20' El.
Rm 45, NE Corridor South Wall
Beta Direct Measurements
F8130631C0013BD to F8130631C0022BD

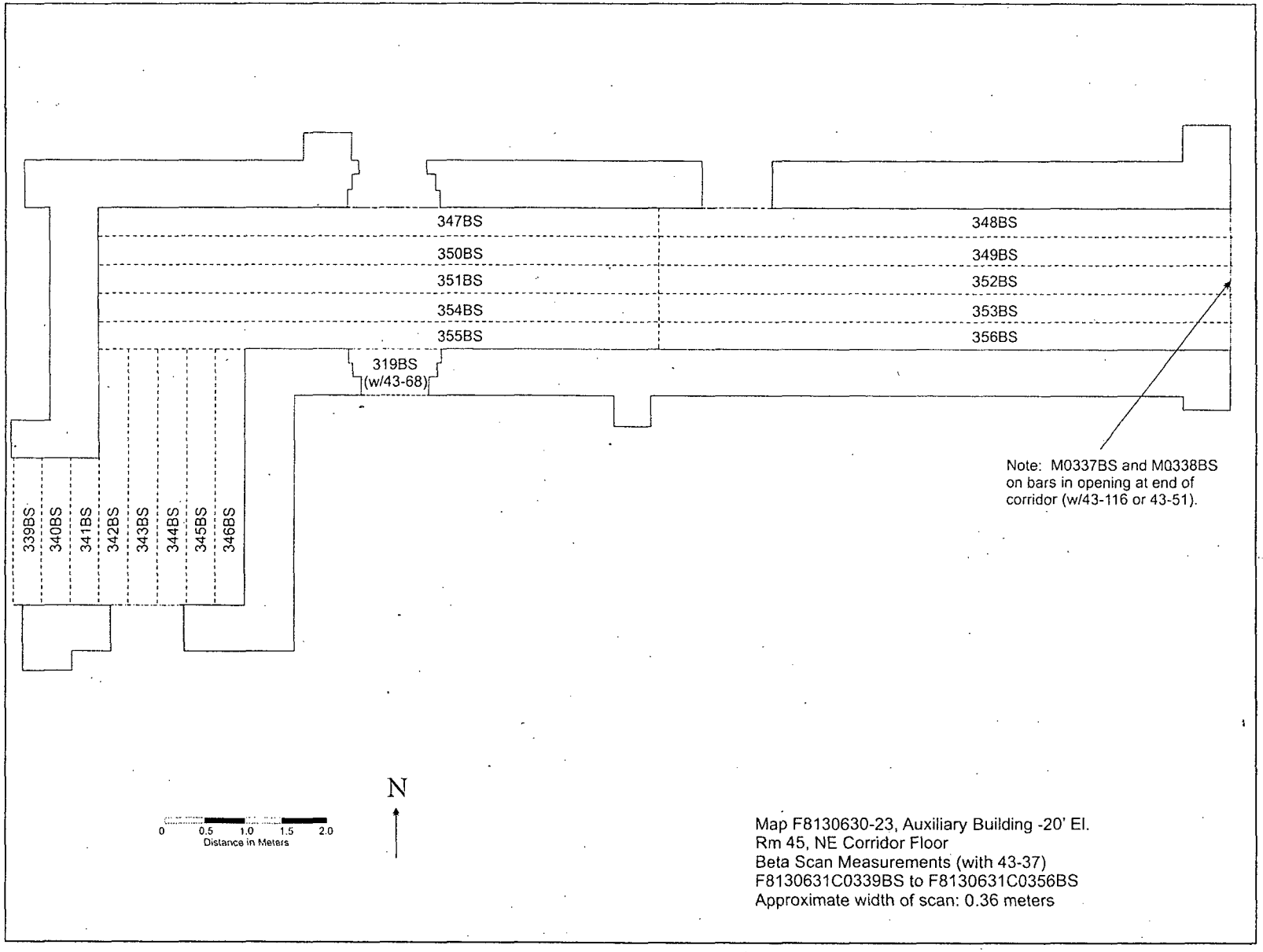


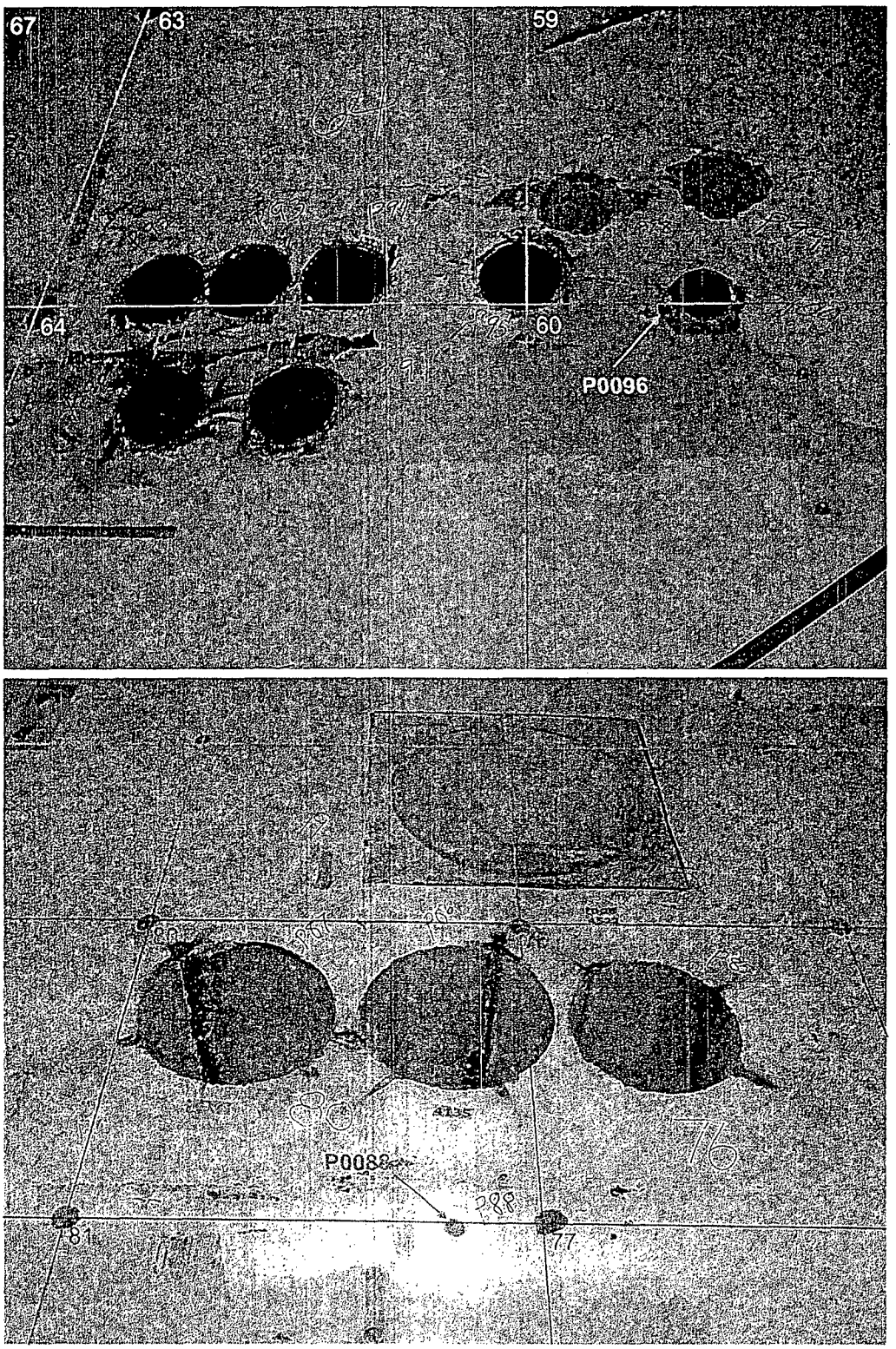
Map F8130630-20, Auxiliary Building -20' El.
Rm 45, NE Corridor North Wall 1
Beta Direct Measurements
F8130631C0023BD to F8130631C0032BD

Map F8130630-21, Auxiliary Building -20' El.
Rm 45, NE Corridor North Wall 2

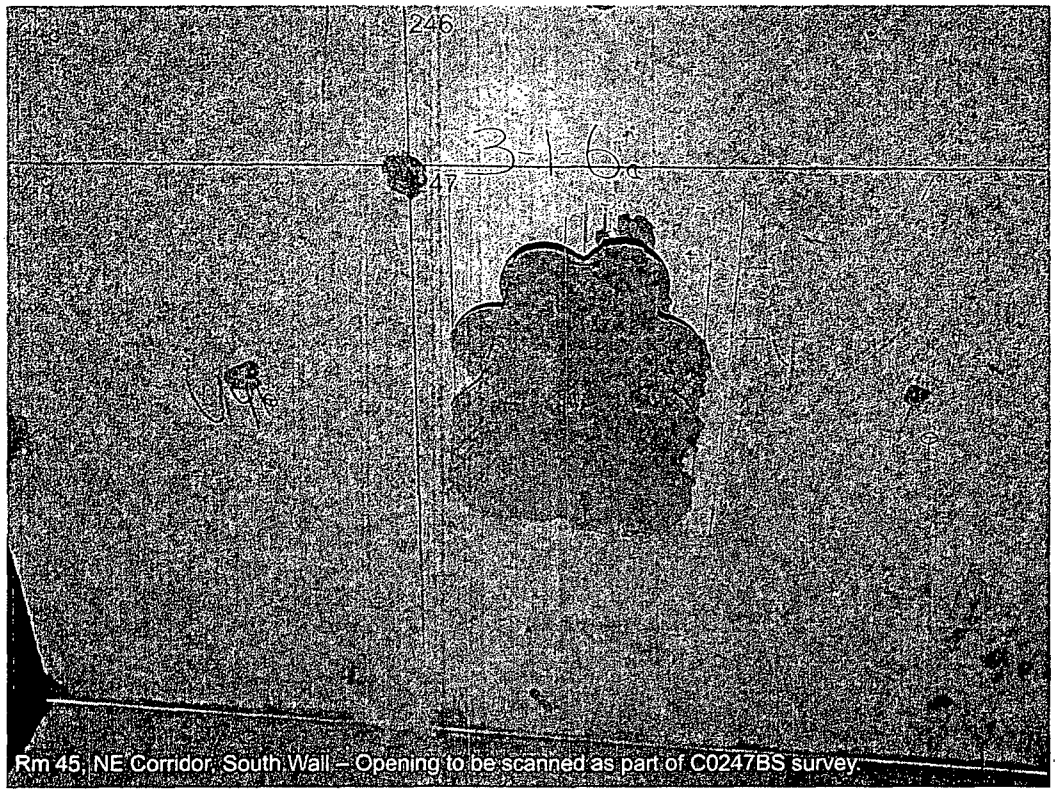
Map F8130630-21, Auxiliary Building -20' El.
Rm 45, NE Corridor West Wall
Beta Direct Measurements
F8130631C0033BD to F8130631C0036BD

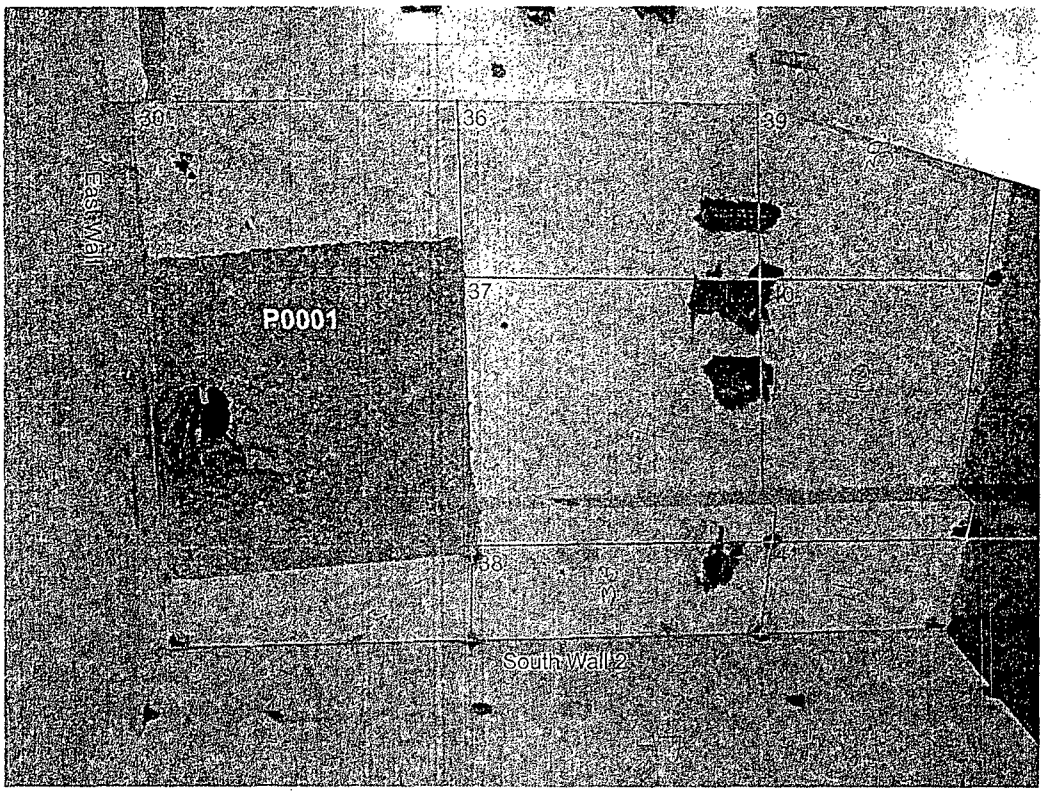

0.77 m
37BD
2.6 m
39BD
2.6 m
40BD
2.6 m
41BD
2.6 m
42BD
2.6 m
43BD
2.6 m
0.77 m
38BD
0
0.5
1.0
1.5
2.0
Distance in Meters
N
Map F8130630-22, Auxiliary Building -20' El.
Rm 45, NE Corridor Ceiling
Beta Direct Measurements
F8130631C0037BD to F8130631C0043BD


347BS
348BS
350BS
349BS
351BS
352BS
354BS
353BS
355BS
356BS
319BS
(w/43-68)
339BS
340BS
341BS
342BS
343BS
344BS
345BS
346BS
Note: M0337BS and M0338BS
on bars in opening at end of
corridor (w/43-116 or 43-51).
0
0.5
1.0
1.5
2.0
Distance in Meters
N
Map F8130630-23, Auxiliary Building -20' El.
Rm 45, NE Corridor Floor
Beta Scan Measurements (with 43-37)
F8130631C0339BS to F8130631C0356BS
Approximate width of scan: 0.36 meters

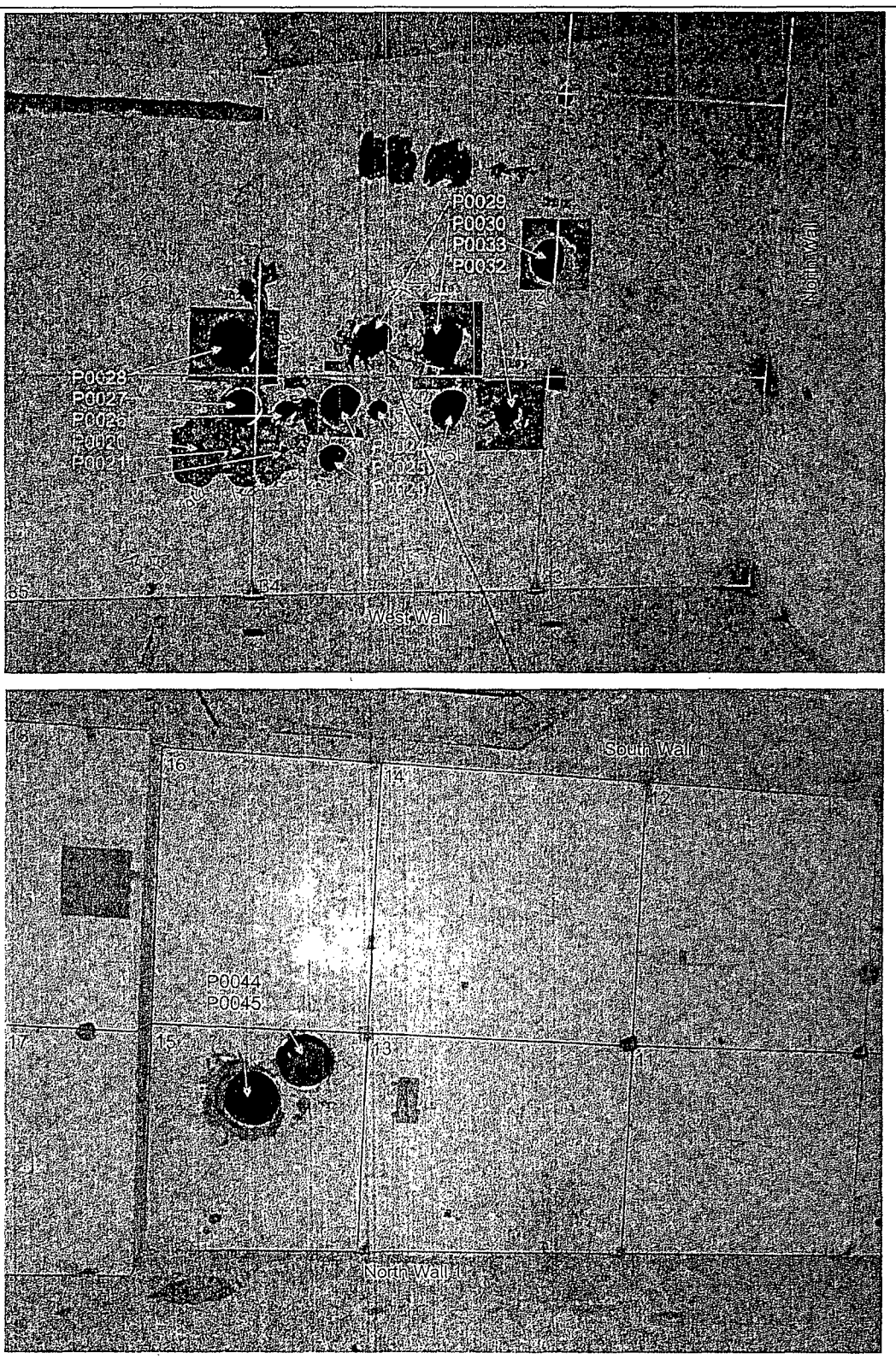


Aux. Bldg -20' El, Rm 43, NE Corridor
Penetrations-1

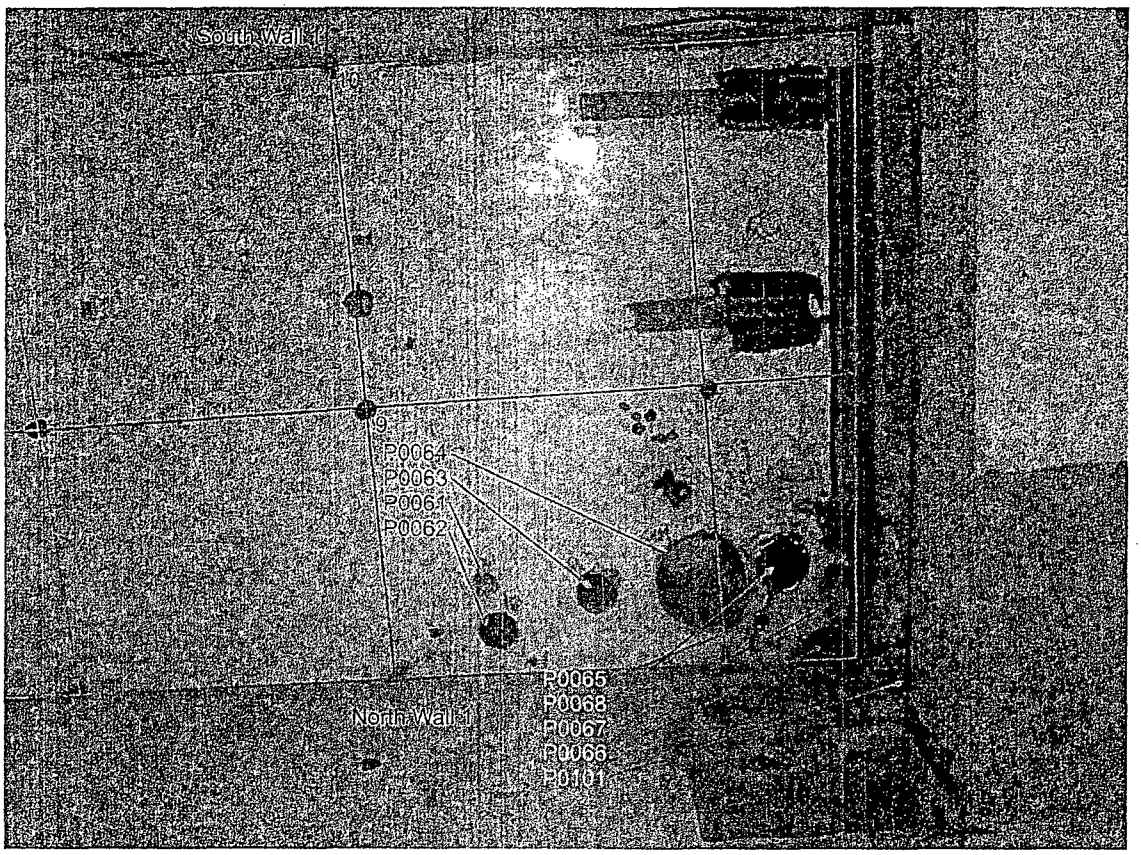


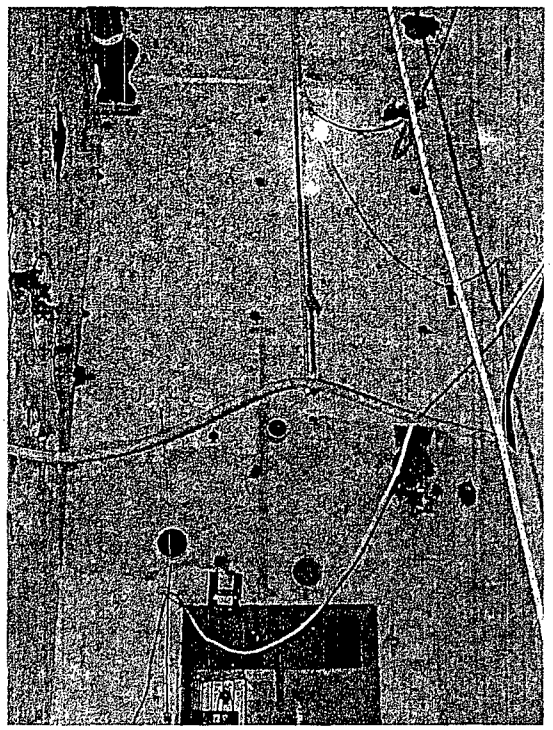


Aux. Bldg -20' El, Rm 43, NE Corridor Penetrations-2



Aux. Bldg -20' El, Rm 43, NE Corridor
Penetrations-3





Aux. Bldg -20' El, Rm 43, NE Corridor
Penetrations-4
Remaining penetrations surveyed under the following packages: F8130611, F8130621, and F8130641

Attachment 2

Instrumentation

November 4, 2007

Survey Unit F8130631

Table 2-1. Survey Unit Instrumentation

Instrument Model; Serial No.	Detector Model; Serial No.	MDC Static (dpm/100 cm²)	MDC Scan (dpm/100 cm²)
M2350; 180733	43-94; 148620	2,630	4,580
M2350; 203481	43-68B; 161405[1]	909	2,169
M2350; 149802	43-68B; 148453[1]		
M2350; 193715	43-68B; 148630[2]	433	1,033
M2350; 149802	43-68B; 148453[2]		
M2350; 142499	43-37; 148502	198	616
M2350; 203486	43-51B; 190666[3]	784	2,660
M2350; 203486	43-51B; 190666[4]	1,324	4,494
M2350; 203486	43-51B; 190666[5]	990	2,313
M2350; 203486	43-51B; 190666[6]	2,078	4,856
M2350; 203465	43-116-1B; 216073[7]	472	3,492
M2350; 149794	43-116-1B; 216072[7]		
M2350; 203465	43-116-1B; 216073[8]	796	5,895
M2350; 149794	43-116-1B; 216072[8]		
M2350; 203486	43-116-1B; 190642[9]	491	739
Tennelec; 0401171	N/A	5 dpm α, 11 dpm β	N/A

[1] 43-68B Concrete surfaces with 1 paint layer
[2] 43-68B Concrete surfaces
[3] 43-51B Metal surfaces
[4] 43-51B Concrete surfaces
[5] 43-51B Concrete junctures
[6] 43-51B Concrete junctures with 1 paint layer
[7] 43-116-1B Metal surfaces
[8] 43-116-1B Concrete surfaces
[9] 43-116-1B Concrete junctures

Instrument	Detector Serial No.	MDC (dpm/100 cm²)
InSpector	08051294	4,670 dpm/100 cm^2 Cs-137 1,340 dpm/100 cm^2 Co-60

Table 2-2. Investigation Criteria and DCGL

Parameter	Value (dpm/100 cm^2)
Investigation Criteria - Direct	141,900
Investigation Criteria – Scan	141,900
$DCGL_W$	43,000
$DCGL_{EMC}$	141,900

Attachment 3

Investigation

November 4, 2007

Survey Unit F8130631

Table 3-1. Survey Unit Investigation

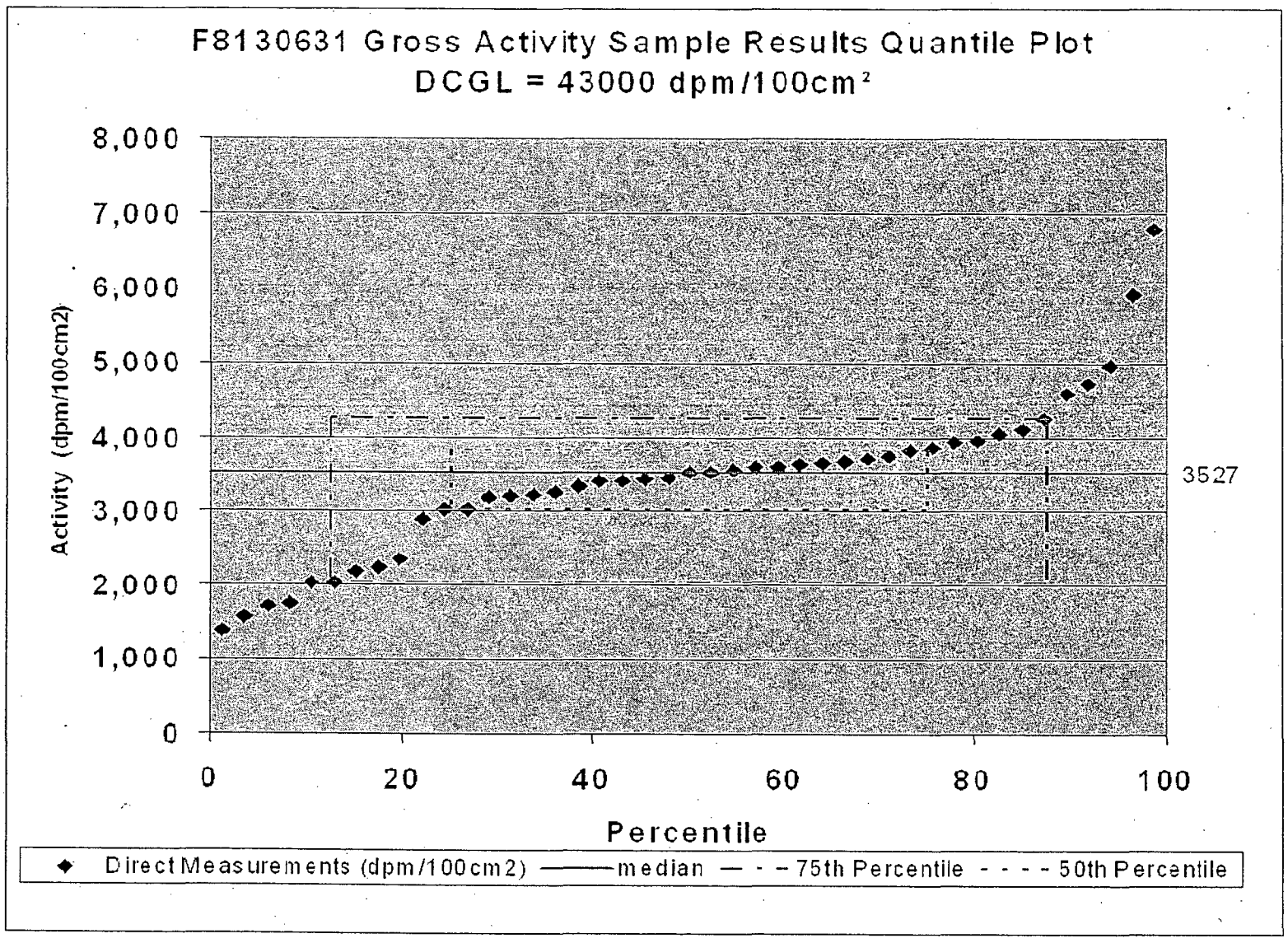
Grid	Initial cpm	Elevated Area (m^2)	Area Factor	DCGLEMC (dpm/100 cm^2)	Investigation Result (dpm/100 cm^2)	DCGLEMC Unity
P0061	N/A	0.219	25.9	1.11E+06	90,710	8.14E-02
P0062	N/A	0.347	25.9	1.11E+06	18,172	1.63E-02
P0063	N/A	0.328	25.9	1.11E+06	9,313	8.36E-03
P0064	N/A	0.930	13.8	5.93E+05	23,372	3.94E-02
P0067	N/A	0.255	25.9	1.11E+06	129,800	1.17E-01
P0068	N/A	0.438	25.9	1.11E+06	63,690	5.72E-02
				SU Mean (dpm/100 cm^2)	**Unitized Mean**	
				3.368E+03	**7.83E-02**	**7.83E-02**
					EMC Unity Sum	**3.98E-01**

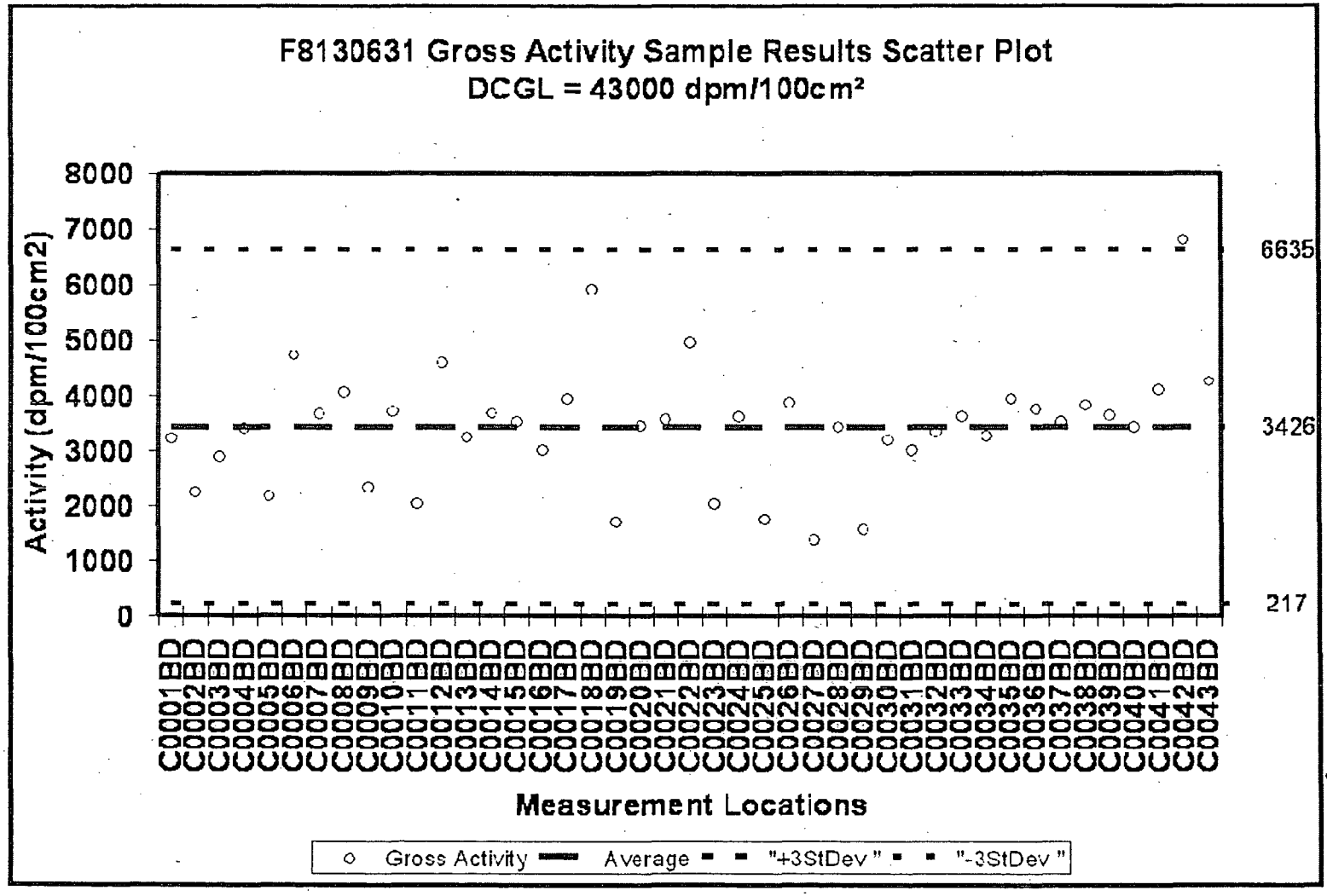
Attachment 4

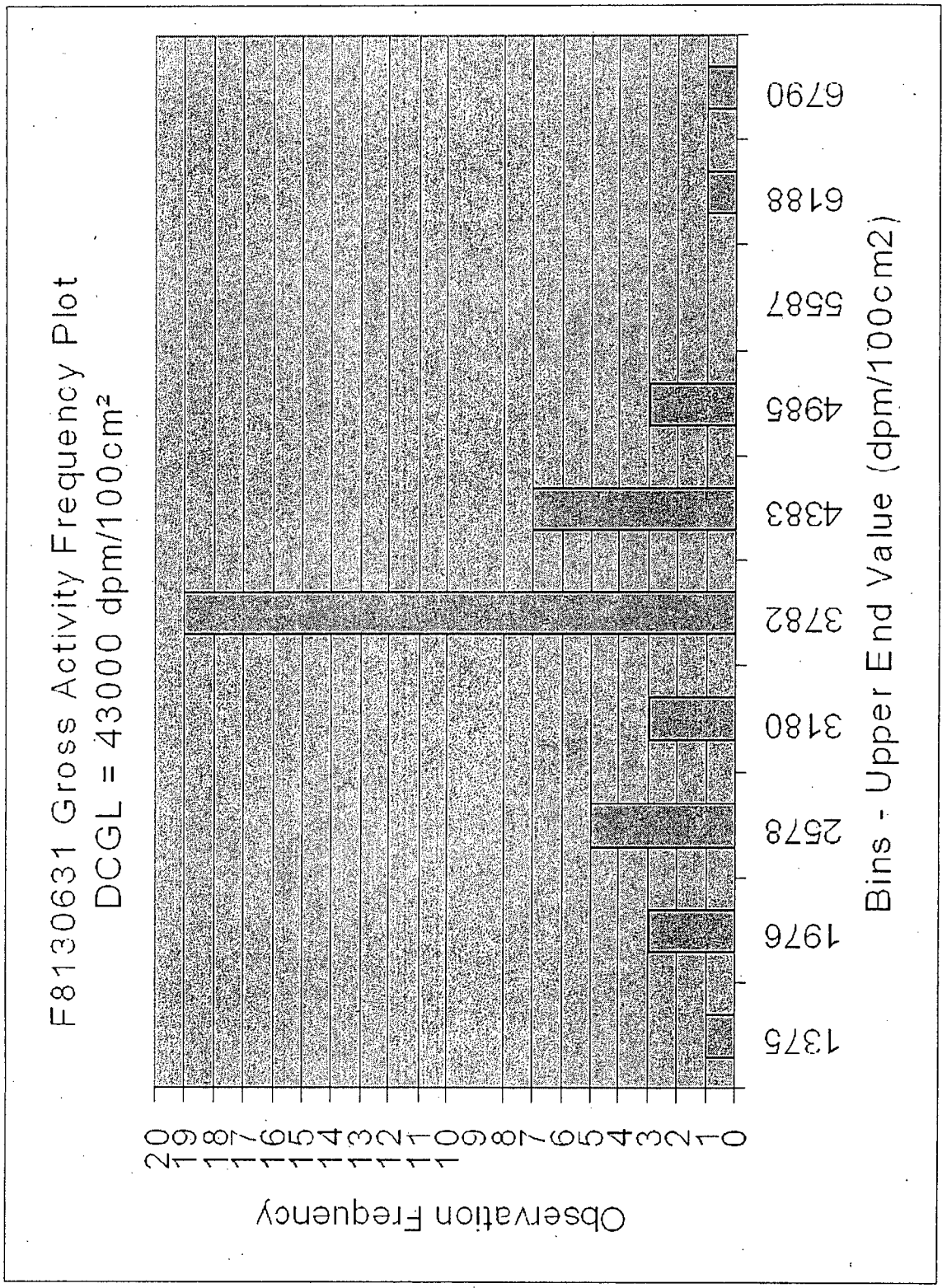
Data Assessment

November 4, 2007

Survey Unit F8130631


F8130631 Gross Activity Sample Results Quantile Plot
DCGL = 43000 dpm/100cm²
Activity (dpm/100cm2)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0
20
40
60
80
100
Percentile
3527
Direct Measurements (dpm/100cm2)
median
75th Percentile
50th Percentile


F8130631 Gross Activity Sample Results Scatter Plot
DCGL = 43000 dpm/100cm²
Activity (dpm/100cm2)
8000
7000
6000
5000
4000
3000
2000
1000
0
6635
3426
217
Measurement Locations
Gross Activity
Average
"+3StDev"
"-3StDev"


F8130631 Gross Activity Frequency Plot
DCGL = 43000 dpm/100cm²
Observation Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Bins - Upper End Value (dpm/100cm2)
1375
1976
2578
3180
3782
4383
4985
5587
6188
6790