Rocky Flats Environmental Technology Site

Building 776 Area V Final Survey Report

Survey Unit: 776011

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ADMIN RECORD

B776/777 SURVEY UNITS
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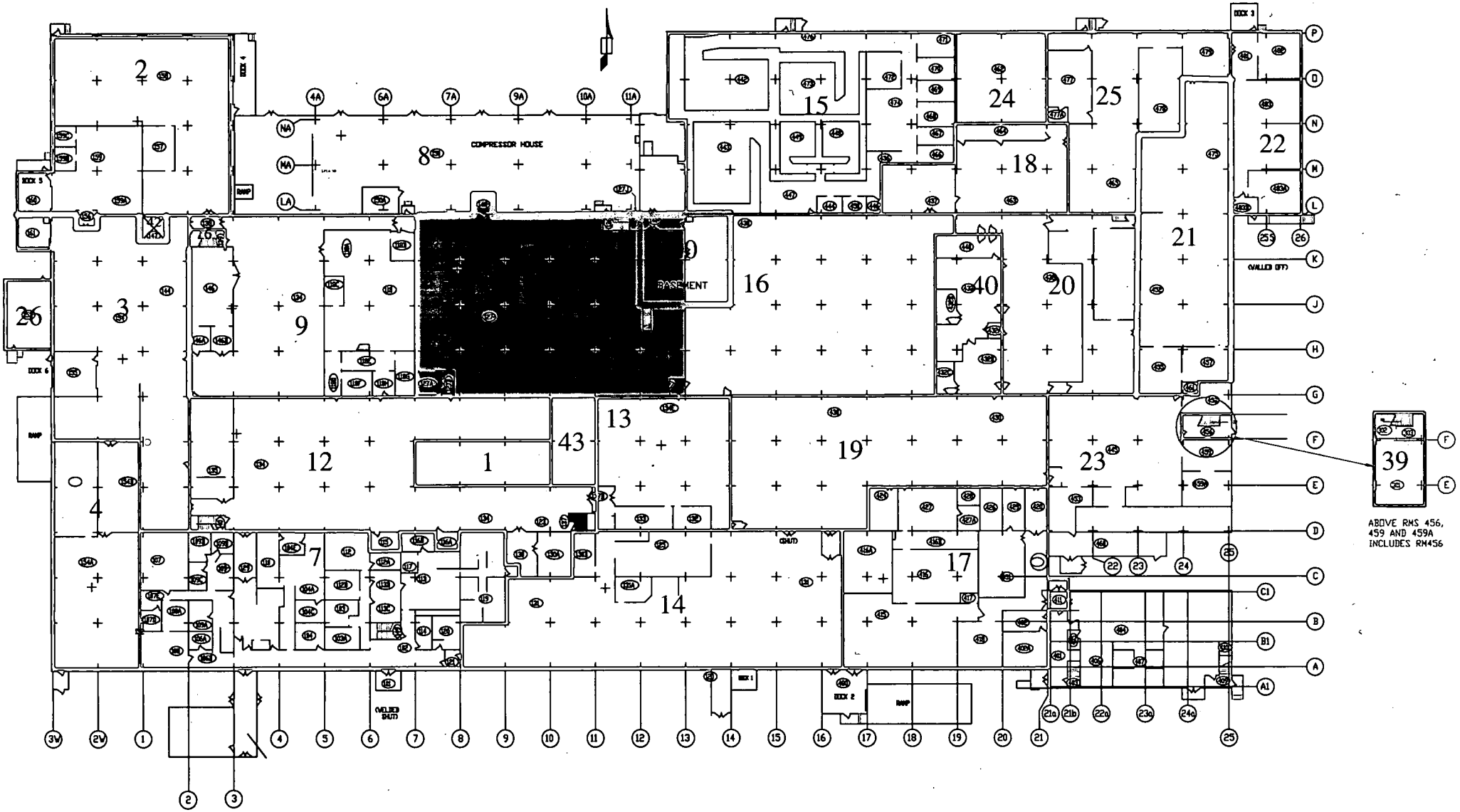
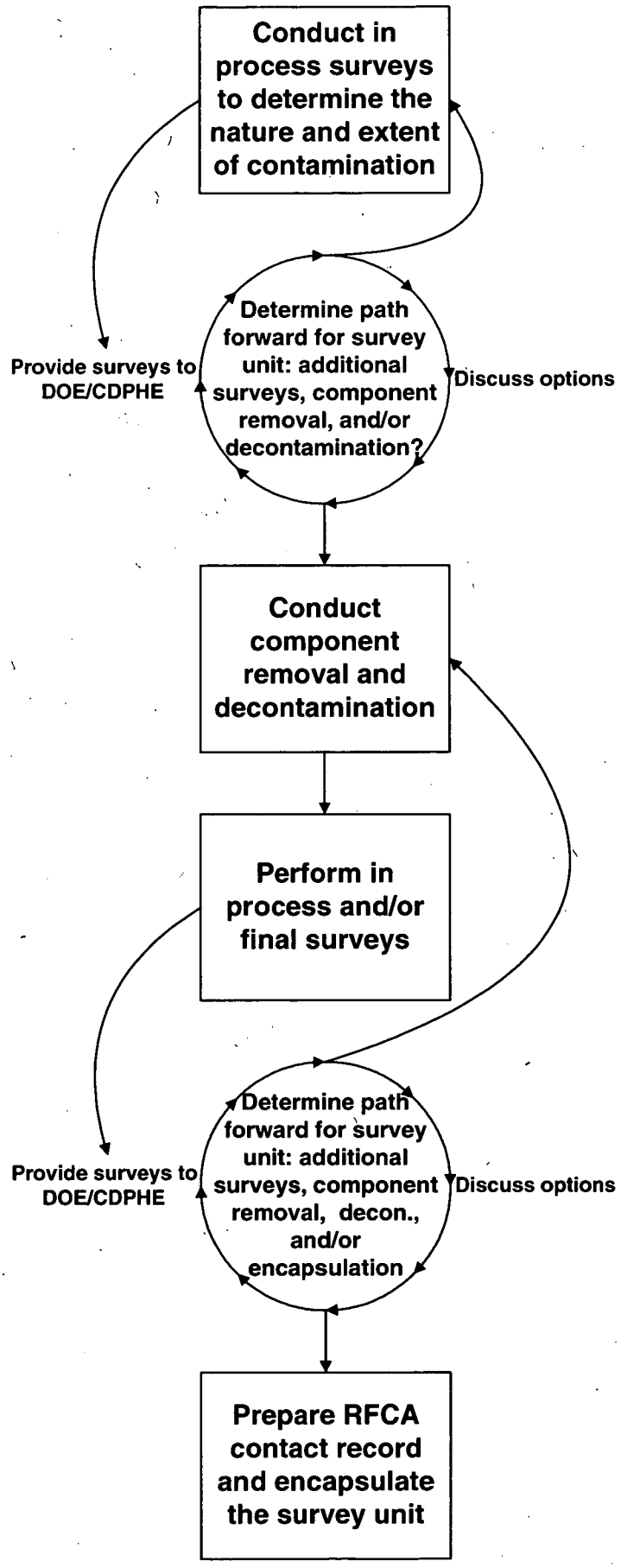


CONSULTATIVE PROCESS



Survey Unit 776011
First Follow-up Survey Instructions For Walls/Ceilings

Survey/ Sampling Instructions

Purpose:
This instruction provides guidance for collecting additional data needed to determine the contamination levels in Survey unit 776011. Work to be performed in accordance with "INS-535-Ludlum2350-1 with Sodium Iodide Detector" and RSP-7.01 and 7.02.

Equipment and materials:
1) A Ludlum 44-17 with side and back shields, attached to a Ludlum 2350-1.
2) HILTI PD 28 Laser range finder or Measuring tape that is at least 10 feet long.

Procedure:

1) RCT, ensure the instrument is functioning by using Americium source TS-912. Obtain one 60 second count at the beginning and end of each workday.

2) RCT, inspect instrument for obvious damage and perform a battery check on the instrument.

3) RCT, obtain a 60 second background measurement on contact with block wall east of column C-20 in room 431 with tin side and back shields around detector.

4) NaI measurements will be taken at the locations marked on the attached sheets in survey unit 776011. Take a 30-second contact reading, centering the detector over the sample location. The sample location is in the center of each grid. Ensure that tin side and back shields are secured around the detector.

Note if sample location is near ductwork or other items that may be the source of elevated readings in the remarks section.

5) Record results on the attached survey form. Also, ensure that all count times are appropriately recorded.

Summary of Survey Instructions

Table -1

Location	Type of Survey	Probe	Placement	Count time
See Attached Map for annotated locations in green-Bottom grids of walls 1A, 1B, 1C, 1D, 5A-5D, 6A-6E, 7A, 8A, 9A, 10A, 11A, 14A, 15A, 16A, 17A, 18A, 19A, 20A, 21A, 22A, 23A, 24A, 25A, 26A, 27A, and 28A. Top grids near ceiling near where blocks were removed or elevated locations noted 1A-1C, 5D, 6B, 21A and 24A.	Total Alpha	G-5 (preferred) or 44-17	On Contact with selected location in each highlighted grid.	30 seconds

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Introduction and Scope

A pre-demolition radiological survey (PDS) is performed prior to building demolition to define the radiological conditions of a facility. A PDS survey for survey unit 776011 has been completed in accordance with guidelines outlined in the "Radiological Pre-Demolition Survey Plan Building 776/777". Based on the results it is recommended that no further remediation is needed, and that the survey unit may be encapsulated in preparation for demolition. Isolation controls shall be put in place to prevent recontamination of the area. This report has been prepared in accordance with sections 3 and 8 of the "Radiological Pre-Demolition Survey Plan Building 776/777".

Survey unit 776011 is Room 127, 127B and 136.

PDS Methods and Techniques

The PDS survey results determine the Average Surface Contamination Value ($ASCV_u$) and source term for the survey unit. These parameters are used determine whether the building may be demolished within the limits outlined in the "Radiological Pre-Demolition Survey Plan Building 776/777".

To comply with the "Radiological Pre-Demolition Survey Plan Building 776/777", a minimum of 30 survey points were selected per survey unit. A random start, systematic grid method was used to identify the survey point locations. Three types of surveys are performed at each survey point as follows:

- Painted surfaces are evaluated for potential contamination under coatings using sodium iodide (NaI) gamma detectors attached to a single channel analyzer windowed for the 59 keV gamma-ray (Am^{241}).

- Direct alpha surface contamination measurements are performed using a NE Electra survey instrument with attached DP-6 probe. This data may be compared to the NaI survey data to show the fraction of contamination that is directly on the surface verses imbedded in the material matrix.

- Removable surface alpha contamination surveys were performed by swiping the survey point with a 47mm filter paper then counting the filter paper on a SAC-4 alpha counter. This data may be used to gauge the effectiveness of encapsulation following the PDS.

To conservatively determine the final Average Surface Contamination Value ($ASCV_u$) for the survey unit, the source term associated with inaccessible areas of the survey unit (as described below) is added to the source term calculated by the PDS survey.

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ALARA Post Remediation Surveys

Accessible Areas

In addition to the PDS used to determine the Average Surface Contamination Value ($ASCV_u$) and source term for the survey unit, surveys were taken to determine the effectiveness of remediation efforts. Remediation is performed to demonstrate a reasonable best effort is made to maintain releases to the environment and doses to the workers ALARA.

Remediation may include decontamination, or removal of parts of the structure such as block wall removal.

Floors

The floors of survey unit 776011 consisted of epoxy covered concrete. In-process measurements collected on the floor of 776011 show that the entire floor had elevated activity. The majority of the floor had levels exceeding SCO I levels after scraping and shaving. All of the floors in this survey unit have been designated SCOII waste. The floors have been removed and packaged. The inventory of the floor will not be included in the calculation of the $ASCV_u$. The reduction in inventory for the floors of 776011 is 100%.

Table 1:
Floor Remediation Results

	Pre-Remediation (In-process)	Post-Remediation (Follow-up)
Maximum ($dpm/100cm^2$)	14,051,535	N/A
Minimum ($dpm/100cm^2$)	12,645	N/A
Average ($dpm/100cm^2$)	519,182	N/A
Average ($\mu Ci/m^2$)	23.4	N/A

Walls

"High density" NaI surveys were performed on walls in Area III to develop a risk based classification of walls. Additionally, a series of holes were made in the hollow block to provide internal contamination levels. The general trend of contamination levels showed the highest levels at the top and the lowest levels at the bottom. This data along with the identification of load-bearing walls provided the basis for classification of building 776 area V walls into three categories:

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i) Type I – Structural or non-structural wall with average contamination levels ranging from < MDA to approximately 100,000 dpm/100 cm^2. These walls require no further remediation.
ii) Type II – Structural or non-structural wall with average contamination levels that range from >100,000 dpm/100cm^2 to <1,000,000 dpm/100cm^2. Some of the type II walls are structural and it has been determined by Engineering that removal is not allowed. For non-structural type II walls partial removal was performed to eliminate the inaccessible area at the top of wall. This will allow additional engineering controls to be applied to minimize the risk of a localized airborne event during demolition.
iii) Type III - Structural or non-structural wall with average contamination levels that exceed >1,000,000 dpm/100cm^2. Some of the type III walls are structural and it has been determined by Engineering that no remediation is allowed. Additional mitigating techniques will be utilized to minimize the potential of a localized airborne event during demolition. For non-structural type III walls partial removal was performed to eliminate the inaccessible area at the top of wall. This will allow additional engineering controls to be applied to minimize the risk of a localized airborne event during demolition.

Survey measurements on walls were taken on an established 3 ft by 3 ft grid pattern. Due to the removal of the floor of unit 776011, 40 of the designated wall sections will be removed and either packaged as SCO wastes or placed in the basement. Some of the rubble from the 40 wall sections will be placed in the basement (survey unit 776010) and the source term will be accounted for in a revised version of the survey unit 776010 final survey report. All walls were in place when the PDS survey was performed.

Walls not designated for removal are denoted in Table 2 of this report. The wall in-process ASCVu was found to be 300,843 dpm/100 cm^2. Remediation efforts yielded a considerable reduction in source term of 58%, or a decontamination factor (DF) of 2.4, reducing average contamination levels to 125,954 dpm/100 cm^2.

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Table 2
B776/777 Survey Unit 776011, Area V Wall Summary

Wall	Section	Area (m.sq)	Comments	Initial Characterization (dpm/100cm^2)			Follow-up Characterization (dpm/100cm^2)			Wall Section Inventory (uCi)
[redacted]				Type I	Type II	Type III	Type I	Type II	Type III	[redacted]
776011-1	A	18.014	Structural		137,609			139289		113.0
776011-1	B		Structural		321,299		REMOVED			
776011-1	C		Structural		467,081		REMOVED			
776011-1	D		Structural		333,050		REMOVED			
776011-2	A	33.396	Structural		461,492			452,797		681.2
776011-2	B	32.502	Structural		412,738			139,311		204.0
776011-2	C	32.502	Structural			[redacted]		156,726		229.5
776011-2	D	35.264	Structural		164,840			131,808		209.4
776011-3	A	15.31			709,068			320,209		220.8
776011-4	A	28.587			838,254			262,868		338.5
776011-4	B	28.723			121,098			109,163		141.2
776011-5	A	15.283	Structural		160,685			110,265		75.9
776011-5	B	32.516	Structural		155,254			110,205		161.4
776011-5	C	32.516	Structural		116,313		[redacted]			144.7
776011-5	D	15.041	Structural		154,134		[redacted]			52.5
776011-6	A		Structural		406,968		REMOVED			
776011-6	B		Structural		229,237		REMOVED			
776011-6	C	32.516	Structural		201,200		[redacted]			141.4
776011-6	D	32.516	Structural		242,022			250,918		367.5
776011-6	E		Structural		201,637		REMOVED			
776011-6	F	17.626	Structural	[redacted]			[redacted]			47.3
776011-7	A	9.61			151,464		[redacted]			36.3
776011-8	A	12.47			438,254			438,254		246.2
776011-9	A	12.47			183,693		[redacted]			37.1
776011-10	A	4.872			447,475		[redacted]			18.8
776011-11	A	12.47			133,597		[redacted]			30.4
776011-12	A	4.872		[redacted]			[redacted]			13.0
776011-13	A	12.47		[redacted]			[redacted]			43.1
776011-14	A	4.077			281,487		[redacted]			0.8
776011-15	A	12.47			116,606		[redacted]			38.4
776011-16	A	6.028			436,409		[redacted]			1.2
776011-17	A	6.503			231,839			158,189		46.3
776011-18	A	2.477			197,802		[redacted]			8.5
776011-19	A	4.395			447,302			164,183		32.5
776011-20	A	2.477			413,586			185,293		20.7
776011-21	A	14.556			749,289			587,330		385.1

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Wall	Section	Area (m.sq)	Comments	Initial Characterization (dpm/100cm^2)			Follow-up Characterization (dpm/100cm^2)			Wall Section Inventory (uCi)
776011-22	A	32.787								96.3
776011-23	A	14.667								53.1
776011-24	A	28.993			147,764					101.5
776011-25	A	13.492			254,099					38.7
776011-26	A	7.432			147,314					26.0
776011-27	A	13.492			117,575					32.8
776011-28	A	7.432								27.7
776011-29	A	13.492			116,191					42.3
776011-30	A	7.432								24.8
		Total Area		Avg. dpm/100 cm^2			Avg. dpm/100 cm^2			Total uCi
		663.748		279603			125954			3986.8
	Type 1: <100,000 dpm/100 cm2									
	Type 2: >100,000 dpm/100 cm2 to <1,000,000 dpm/100 cm2									
	Type 3: >1,000,000 dpm/100 cm2									

Ceilings

Six areas of the ceiling in unit 776011 were found to have contamination levels higher than the MDA of 65,000 dpm/100cm^2. Three of these samples were found with contamination greater than 100,000 dpm/100cm^2. Ceiling point 148 was the highest with 246,082 dpm/100cm^2.

Table 3:
Ceiling Remediation Results

	Pre-Remediation (In-process)	**Post-Remediation (follow-up)**
Maximum (dpm/100cm^2)	489,931	246,082
Average (dpm/100cm^2)	44747	30218

Inaccessible Areas

Columns

The columns in this survey unit are encased in concrete. The concrete was applied after the 1969 fire to strengthen columns which may have been damaged by the heat of the fire. Column K-8 was selected for investigation because it is located in the area that was most affected by the 1969 fire. Column K-8 had concrete removed from an area five feet from the floor. The steel beam inside was exposed and no elevated contamination was encountered.
There were elevated readings on the tops of some columns. Surveys indicated high levels of contamination exist in small areas of the columns. The contaminated portions were in the top

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twelve inches of each of the identified columns and were conservatively estimated to 0.25 m^2 of area per column for a total area of $2m^2$. The amount of activity remaining in the area is estimated to be 1264 uCi.

Activity Calculation: ($2m^2$ x 632 uCi/m^2)= 1264 uCi

Walls
No inaccessible areas requiring further investigation were found on the walls. Contamination in the inaccessible areas does not contribute significantly to the inventory of the survey unit.

Ceiling

No inaccessible areas requiring further investigation were found on the ceilings. Contamination in the inaccessible areas does not contribute significantly to the inventory of the survey unit.

PDS Survey Results Summary

The values for the accessible areas and inaccessible areas were summed and divided by the total area for the survey unit to calculate the "Average Surface Contamination Value" ($ASCV_u$) and source term for the survey unit. The results are summarized in Table 4 below:

Table 4:
PDS Final Results

Area/ item	Final Results
776011 Source Term Inaccessible Areas (μCi)	1264
776011 Source Term Accessible Areas (μCi)	1904
776011 Total Source Term (μCi)	3168
Survey Unit Area (m^2)	1757
$ASCV_u$ ($\mu Ci/m^2$)	1.80
$ASCV_u$ ($dpm/100cm^2$)	40,028

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Table 4 Notes:

a) Inaccessible areas source term from pages 6 of this report.
b) Accessible area source term is the sum of source terms attributed to floors, walls and ceiling as determined by the final PDS survey.
c) Total Source Term equals the sums of the source terms of Inaccessible Area + Accessible Area.

Total Source Term = (1264+1904) μCi = 3168μCi

d) Average Surface Contamination for the Survey Unit ($ASCV_u$) in dpm/100cm^2 equals:

$ASCV_u$ = (3168μCi)(22,200 dpm/100cm^2 / 1 μCi /m^2) / (1757 m^2)= 40,028 dpm/100cm^2

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Survey Unit 776011 Followup NaI Data
(Ceiling)

Location #	Column letter	Column Number	North	East	Surface	Gross Counts	Probe Serial #	In process dpm/100cm^2	Follow up dpm/100cm^2
11-99	K	7	17	6	Ceiling	255	199757	23,274	23,274
11-100	K	7	17	17	Ceiling	248	199757	23,274	23,274
11-101	K	8	17	6	Ceiling	305	199757	39,815	39,815
11-102	K	8	14	16	Ceiling	182	199757	23,274	23,274
11-103	K	9	16	6	Ceiling	209	199757	24,715	24,715
11-104	K	9	17	15	Ceiling	178	199757	24,715	24,715
11-105	K	10	15	3	Ceiling	183	199757	24,715	24,715
11-106	K	10	16	16	Ceiling	175	199757	24,715	24,715
11-107	K	11	7	3	Ceiling	123	199757	24,715	24,715
11-108	K	11	8	14	Ceiling	239	199757	24,715	24,715
11-109	K	12	16	9	Ceiling	170	209090	24,806	12,170
11-110	K	12	17	15	Ceiling	224	209090	24,806	12,170
11-111	K	12	3	16	Ceiling	226	209090	24,806	12,170
11-112	K	12	3	6	Ceiling	279	209090	28,355	13,911
11-113	K	11	1	15	Ceiling	169	199757	24,715	24,715
11-114	K	11	3	4	Ceiling	190	199757	24,715	24,715
11-115	K	10	4	15	Ceiling	170	199757	24,715	24,715
11-116	K	10	3	3	Ceiling	207	199757	24,715	24,715
11-117	K	9	3	13	Ceiling	213	199757	24,715	24,715
11-118	K	9	4	3	Ceiling	210	199757	24,715	24,715
11-119	K	8	2	14	Ceiling	171	199757	23,274	23,274
11-120	K	8	4	5	Ceiling	160	199757	23,274	23,274
11-121	K	7	2	16	Ceiling	143	199757	23,274	23,274
11-122	K	7	4	5	Ceiling	188	199757	23,274	23,274
11-123	J	7	19	4	Ceiling	217	199757	23,274	23,274
11-124	J	7	15	15	Ceiling	294	199757	32,751	32,751
11-125	J	8	13	5	Ceiling	340	199757	62,291	62,291
11-126	J	8	11	14	Ceiling	237	199757	23,274	23,274
11-127	J	9	19	6	Ceiling	266	199757	24,715	24,715
11-128	J	9	15	15	Ceiling	207	199757	24,715	24,715
11-129	J	10	13	2	Ceiling	218	199757	24,715	24,715
11-130	J	10	17	14	Ceiling	276	199757	24,715	24,715
11-131	J	11	13	4	Ceiling	166	199757	24,715	24,715
11-132	J	11	16	16	Ceiling	212	199757	24,715	24,715
11-133	J	12	17	7	Ceiling	273	209090	24,806	12,170
11-134	J	12	14	16	Ceiling	191	209090	24,806	12,170
11-135	J	12	5	16	Ceiling	200	209090	24,806	12,170
11-136	J	12	5	5	Ceiling	260	209090	24,806	12,170
11-137	J	11	3	15	Ceiling	210	199757	24,715	24,715
11-138	J	11	4	6	Ceiling	267	199757	24,715	24,715
11-139	J	10	4	13	Ceiling	272	199757	24,715	24,715
11-140	J	10	3	4	Ceiling	249	199757	24,715	24,715

Survey Unit 776011 Followup NaI Data
(Ceiling)

Location #	Column letter	Column Number	North	East	Surface	Gross Counts	Probe Serial #	In process dpm/100cm^2	Follow up dpm/100cm^2
11-141	J	9	7	14	Ceiling	212	199757	24,715	24,715
11-142	J	9	6	5	Ceiling	208	199757	24,715	24,715
11-143	J	8	3	13	Ceiling	291	199757	30,824	30,824
11-144	J	8	3	4	Ceiling	318	199757	48,163	48,163
11-145	J	7	4	16	Ceiling	344	199757	64,860	64,860
11-146	J	7	4	6	Ceiling	213	199757	23,274	23,274
11-147	H	7	15	5	Ceiling	214	199757	23,274	23,274
11-148	H	7	18	15	Ceiling	250	199764	[illegible]	[illegible]
11-149	H	8	14	6	Ceiling	230	199757	23,274	23,274
11-150	H	8	13	12	Ceiling	244	199757	23,274	23,274
11-151	H	9	15	5	Ceiling	253	209090	28,355	13,911
11-152	H	9	16	13	Ceiling	265	209090	36,654	17,983
11-153	H	10	16	4	Ceiling	194	209090	23,412	11,486
11-154	H	10	16	18	Ceiling	193	209090	23,412	11,486
11-155	H	11	18	7	Ceiling	221	199757	24,715	24,715
11-156	H	11	16	17	Ceiling	215	199757	24,715	24,715
11-157	H	12	17	5	Ceiling	263	209090	24,806	12,170
11-158	H	12	17	15	Ceiling	244	209090	24,806	12,170
11-159	H	12	4	17	Ceiling	293	209090	38,037	18,661
11-160	H	12	4	6	Ceiling	337	209090	68,467	33,590
11-161	H	11	8	16	Ceiling	262	199757	24,715	24,715
11-162	H	11	5	4	Ceiling	224	199757	24,715	24,715
11-163	H	10	3	16	Ceiling	253	209090	28,355	13,911
11-164	H	10	2	4	Ceiling	203	209090	23,412	11,486
11-165	H	9	8	13	Ceiling	298	209090	59,477	29,179
11-166	H	9	9	4	Ceiling	224	209090	23,412	11,486
11-167	H	8	3	13	Ceiling	258	199757	23,274	23,274
11-168	H	8	5	3	Ceiling	219	199757	23,274	23,274
11-169	H	7	8	17	Ceiling	389	199757	93,758	93,758
11-170	H	7	8	4	Ceiling	256	199757	23,274	23,274
11-171	G	7	14	7	Ceiling	192	199757	23,274	23,274
11-172	G	7	13	16	Ceiling	245	199764	[illegible]	[illegible]
11-173	G	8	14	5	Ceiling	222	199757	23,274	23,274
11-174	G	8	16	12	Ceiling	275	199757	23,274	23,274
11-175	G	9	14	6	Ceiling	246	209090	23,514	11,536
11-176	G	9	16	14	Ceiling	273	209090	42,187	20,697
11-177	G	10	15	8	Ceiling	357	209090	[illegible]	49,198
11-178	G	10	18	17	Ceiling	328	209090	80,224	39,358
11-179	G	11	17	5	Ceiling	163	199764	[illegible]	134,857
11-180	G	11	19	14	Ceiling	330	199757	35,962	35,962
11-181	G	12	16	5	Ceiling	319	209090	56,019	27,483
11-182	G	12	16	15	Ceiling	366	209090	88,523	43,430

Survey Unit 776011 Followup NaI Data
(Ceiling)

Location #	Column letter	Column Number	North	East	Surface	Gross Counts	Probe Serial #	In process dpm/100cm^2	Follow up dpm/100cm^2
11-183	G	12	7	14	Ceiling	192	209090	24,806	12,170
11-184	G	12	4	4	Ceiling	256	209090	24,806	12,170
11-185	G	11	4	17	Ceiling	99	199764	[redacted]	88,877
11-186	G	11	3	7	Ceiling	338	199757	41,099	41,099
11-187	G	10	4	16	Ceiling	237	209090	23,412	11,486
11-188	G	10	3	7	Ceiling	235	209090	23,412	11,486
11-189	G	9	2	17	Ceiling	203	209090	23,412	11,486
11-190	G	9	3	4	Ceiling	179	209090	23,412	11,486
11-191	G	8	8	15	Ceiling	211	199757	23,274	23,274
11-192	G	8	6	4	Ceiling	142	199757	23,274	23,274
11-193	G	7	2	15	Ceiling	315	199757	46,237	46,237
11-194	G	7	7	1	Ceiling	253	199757	23,274	12,297
11-195	G	12	3	19	8	205	209090	No data	11,486
11-196	G	7	5	6	10	173	209090	No data	11,486
11-197	G	7	3	18	10	153	209090	No data	11,486

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Unit	776011	Wall	1	Section	A	Date	4/26/04

	1,015,524	112,324	21,313	3,385	39,745	23,617	55,874	42,049	118,084	43,202	48,962	5,184	3,385	33,985	
Column #															Column #
G-7															H-7
ELEV. (ft) 12	109,819		90,552		89,268		117,525		136,792		143,214				
9	39,175		32,753		32,753		58,442		58,442		94,406				
6									78,992		100,828				
3									134,223		52,019				
0									270,372		867,632				

Row Average	111,902
Row Average	#DIV/0!
Row Average	114,528
Row Average	52,662
Row Average	89,910
Row Average	93,121
Row Average	569,002

Probe# 1	199757	Background 1	165	Probe# 2		Background 2	
Efficiency 1	280	RCT 1	Kaczar	Efficiency 2		RCT 2	
Contact Eff. 1	0.0790			Contact Eff. 2			

Section Average
139,289

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	2	Section	A	Date	4/25/04

																Row Average #DIV/0!
	672,270	442,921	433,213	609,169	547,281	597,034	764,494	901,618	1,437,978	692,899	480,539	741,438	536,360	708,674		Row Average 683,278
Column # L-7															Column # L-8	
ELEV. (ft) 12	145,355		131,868			181,319			77,922		125,874			107,892		Row Average 128,372
9	167,832		113,886			143,856			109,391		94,406			137,862		Row Average 127,872
6	188,811		116,883			139,361			110,889		95,904			104,895		Row Average 126,124
3	32,837		14,073			4,671			50,037		45,346			18,764		Row Average 27,621
0	23,455		43,782			73,492			53,164		50,037			51,601		Row Average 49,255

Probe# 1	204360	Background 1	120
Efficiency 1	240	RCT 1	Kaczar
Contact Eff. 1	0.0750		

Probe# 2	199765	Background 2	212
Efficiency 2	230	RCT 2	K Creason
Contact Eff. 2	0.0800		

Section Average 91,849

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	2	Section	B	Date	4/25/04

Column #	1,169,798	1,236,539	646,787	855,506	724,449	887,056	1,048,449	1,245,034	978,067	644,360	734,157	972,000	839,730	646,787	Column #	Row Average
																#DIV/0!
																Row Average 902,051
L-8															L-9	
ELEV. (ft) 12	193,307		131,868		215,784		122,877		157,343		164,835					Row Average 164,336
9	197,802		170,829		170,829		199,301		211,289		193,307					Row Average 190,559
6	266,733		199,301		226,274		173,826		242,757		155,844					Row Average 210,789
3	96,946		45,346				39,091		21,891		4,671					Row Average 41,589
0	75,055		56,291				65,673		45,346		56,291					Row Average 59,732

Probe# 1	204360	Background 1	120
Efficiency 1	240	RCT 1	Kaczar
Contact Eff. 1	0.0750		

Probe# 2	199765	Background 2	212
Efficiency 2	230	RCT 2	T.CREASON
Contact Eff. 2	0.0800		

Section Average
139,311

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	2	Section	C	Date	4/25/04

	23,041	28,801	42,626	52,994	40,321	40,321	66,818	62,210	41,473	80,643	49,538	33,409	72,579	40,321	3,140	
																Row Average 45,216
																Row Average #DIV/0!
Column # L-9																Column # L-10
ELEV. (ft) 12	169,545			155,416			214,500			249,179			164,407		174,682	Row Average 187,955
9	165,691			192,664			335,236			303,125			222,206		193,949	Row Average 235,479
6	168,260			206,793			354,502			398,173			242,757		232,482	Row Average 267,161
3	45,346			10,946			18,764			4,671			50,037		37,528	Row Average 27,882
0	73,492			37,528			34,400			53,164			95,383		96,946	Row Average 65,152

Probe# 1	199757	Background 1	142	Probe# 2	199765	Background 2	212
Efficiency 1	280	RCT 1	TA Creason	Efficiency 2	230	RCT 2	T.CREASON
Contact Eff. 1	0.0790			Contact Eff. 2	0.0800		

Section Average 156,726

dpm/100cm^2

Count Time (s) 30

19

Unit	776011	Wall	2	Section	D	Date	4/25/04

	3,140	3,140	36,865	35,713	48,386	26,497	48,386	26,497	38,017	24,193	16,129	10,368	23,041	20,737	18,433	Row Average 25,303
Column #																Row Average #DIV/0!
L-10																L-11
ELEV. (ft) 12	98,901		152,847			152,847			111,745		107,892			82,203		Row Average 117,739
9	177,251		119,452			181,104			206,793		140,003			123,305		Row Average 157,985
6	129,727		157,985			177,251			184,958		120,736			118,167		Row Average 148,137
3	228,628		209,362			201,655			218,353		160,554			122,021		Row Average 190,095
0	70,364		39,091			39,091			39,091		59,419			23,455		Row Average 45,085

Probe# 1	199757	Background 1	142
Efficiency 1	280	RCT 1	KL Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	212
Efficiency 2	230	RCT 2	T.CREASON
Contact Eff. 2	0.0800		

Section Average 131,808

dpm/100cm^2

Count Time (s)	30

20

Unit	776011	Wall	3	Section	A	Date	4/25/04

Column # L-11						Column # K-11	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft)							
12							Row Average #DIV/0!
9	169,545	181,104	549,735				Row Average 300,128
6	177,251	183,673	620,379				Row Average 327,101
3	272,075	200,147	9,382				Row Average 160,535
0	1,024,192	419,059	35,964				Row Average 493,072

Probe# 1	199757	Background 1	142
Efficiency 1	280	RCT 1	KL Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	212
Efficiency 2	230	RCT 2	T.CREASON
Contact Eff. 2	0.0800		

Section Average 320,209

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	4	Section	A	Date	4/27/04

Column #	K-11						Column #	K-12	Row Average
									#DIV/0!
									Row Average #DIV/0!
ELEV. (ft)									
12									Row Average #DIV/0!
9	51,601	145,420	604,849	586,867	290,981	753,609			Row Average 405,555
6	784,669	67,237	98,510	128,219	54,728	398,873			Row Average 255,373
3	46,910	57,855	192,329	118,838	93,819	575,424			Row Average 180,862
0	115,710	57,855	84,437	132,910	54,728	812,459			Row Average 209,683

Probe# 1	199764	Background 1	204
Efficiency 1	220	RCT 1	Pacheco
Contact Eff. 1	0.0880		

Probe# 2	199765	Background 2	212
Efficiency 2	230	RCT 2	KL Creason
Contact Eff. 2	0.0800		

Section Average
262,868

dpm/100cm^2

Count Time (s)	30

22

Unit	776011	Wall	4	Section	B	Date	4/27/04

	3,786	43,076	56,330	35,344	46,389	8,836	6,627	36,449	19,881	25,404	20,986	35,344	19,881	41,971	3,786
Column #	K-12														K-13
ELEV. (ft)															
12	148,006		112,042			38,730			96,826		337,508			87,144	
9	139,706		125,874			113,425			100,976		78,844			92,676	
6	197,802		192,269			105,126			113,425		77,461			85,760	
3						116,191			121,724		127,257			146,622	
0						4,671			37,528		21,891			18,764	

Row	Row Average
	26,939
	Row Average #DIV/0!
12	136,709
9	108,584
6	128,640
3	127,949
0	20,713

Probe# 1	209090	Background 1	178
Efficiency 1	260	RCT 1	TA Creason
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	212
Efficiency 2	230	RCT 2	T.CREASON
Contact Eff. 2	0.0800		

Section Average 109,163

dpm/100cm^2

Count Time (s)	30

23

Unit	776011	Wall	5	Section	A	Date	4/22/04

								61,888	63,101	64,315	37,618	23,056	55,820	44,899	29,124	Row Average 47,478
																Row Average #DIV/0!
Column # L-13																Column # K-13
ELEV. (ft) 12						172,328		140,859		155,844		152,847				Row Average 155,469
9						91,409		167,832		169,331		127,373				Row Average 138,986
6						47,691		38,309		33,619		94,601				Row Average 53,555
3												93,037				Row Average 93,037
0												58,637				Row Average 58,637

Probe# 1	204360	Background 1	134	Probe# 2	199765	Background 2	203
Efficiency 1	240	RCT 1	Kaczar	Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 1	0.0750			Contact Eff. 2	0.0800		

FOLLOE UP INSTRUMENT 11/12/2004

Section Average
110,265

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	5	Section	B	Date	4/22/04

	60,674	38,831	59,461	55,820	57,034	54,607	69,169	37,618				23,056	58,247	26,697	23,056	Row Average 47,022
Column #																Row Average #DIV/0!
K-13																J-13
ELEV. (ft) 12	79,421		118,382			124,376			68,931			100,400			136,364	Row Average 104,645
9	65,934		104,895			121,379			137,862			106,394			124,376	Row Average 110,140
6	143,856		92,907			127,373			136,364			160,340			145,355	Row Average 134,366
3	154,346		136,364			163,337			158,841			184,316			151,349	Row Average 158,092
0	27,364		13,291			80,528			52,382			47,691			41,437	Row Average 43,782

Probe# 1	204360	Background 1	134
Efficiency 1	240	RCT 1	Kaczar
Contact Eff. 1	0.0750		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 1/12/2004

Section Average 110,205

dpm/100cm^2

Count Time (s)	30

25

Unit	776011	Wall	5	Section	C	Date	4/27/04

	11,520	21,889	19,585	31,105	46,082	29,953	43,778	43,778	31,105	34,561	42,626	36,865	42,626	41,473	
Column # J-13															Column # H-13
ELEV. (ft) 12	88,626		98,901			131,012			86,057		105,323		104,039		
9	92,479		109,176			109,176			95,048		100,185		120,736		
6	120,736		116,883			116,883			131,012		106,608		133,581		
3	102,754		106,608			106,608			145,140		160,554		166,976		
0	64,892		13,291			4,570			41,437		47,691		36,746		

Row Average 34,067
Row Average #DIV/0!
Row Average 102,326
Row Average 104,467
Row Average 120,950
Row Average 131,440
Row Average 34,771

Probe# 1	199757	Background 1	136
Efficiency 1	280	RCT 1	Kaczar
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average 98,791

dpm/100cm^2

Count Time (s)	30

26

Unit	776011	Wall	5	Section	D	Date	4/27/04

	119,812	62,210	25,345	4,608	25,345	52,994	57,602	27,649	44,930	47,234	49,538	2,746,466	62,210	42,626	44,930	
Column # H-13																Column # G-13
ELEV. (ft) 12	77,066			78,350		77,066			52,382		53,946			25,800		
9	120,736			106,608		115,599			50,819		21,109			28,928		
6	122,021			102,754		97,617										
3	173,398			119,452		104,039										
0	30,491			28,928		39,873										

Row Average #DIV/0!
Row Average 227,566
Row Average 60,768
Row Average 73,966
Row Average 107,464
Row Average 132,296
Row Average 33,097

Probe# 1	199757	Background 1	136
Efficiency 1	280	RCT 1	Kaczar
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average 77,475

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	6	Section	C	Date	4/28/04

		8,064	41,473	39,169	32,257	72,579	91,011	33,409	52,994	35,713	58,754	59,906	52,994	47,234	10,368	Row Average 45,423
Column #																Row Average #DIV/0!
G-11																G-10
ELEV. (ft) 12		127,158		102,754		210,646		114,314		95,048		141,287				Row Average 131,868
9		109,176		165,691		253,032		104,039		93,763		172,113				Row Average 149,636
6		132,296		147,709		210,646		123,305		142,572		192,664				Row Average 158,199
3		10,164		4,570		4,570		19,546		27,364		27,364				Row Average 15,596
0		4,570		13,291		4,570		4,570		27,364		110,237				Row Average 27,434

Probe# 1	199757	Background 1	126
Efficiency 1	280	RCT 1	Kaczar
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average 96,547

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	6	Section	D	Date	4/28/04

	69,032	35,896	8,284	10,493	3,775	40,314	13,806	24,851	24,851	32,583	27,060	17,120	3,775	24,851	116,525	Row Average 30,215
Column # G-10																Column # G-9 / Row Average #DIV/0!
ELEV. (ft) 12	148,697			139,015		307,769			97,518		109,967			114,117		Row Average 152,847
9	208,176			115,500		367,248			192,961		133,482			147,314		Row Average 194,113
6	208,176			161,146		187,428			233,074		134,865			129,332		Row Average 175,670
3	399,062			414,278		158,380			235,841		237,224			288,404		Row Average 288,865
0	898,408			280,104		188,811			213,709		389,379			688,157		Row Average 443,095

Probe# 1	209090	Background 1	177	Probe# 2		Background 2	
Efficiency 1	260	RCT 1	TA Creason	Efficiency 2		RCT 2	KL Creason
Contact Eff. 1	0.0824			Contact Eff. 2			

Section Average 250,918

dpm/100cm^2

Count Time (s) 30

29

Unit	776011	Wall	6	Section	F	Date	4/28/04

	25,956	10,493	39,210	3,775	9,388	19,329	14,911	13,806	17,120	10,493	6,075	9,388			3,775	Row Average 14,132
Column #															Column #	Row Average #DIV/0!
G-8															G-7	
ELEV. (ft) 12	154,230			68,470		57,404			72,620		50,488					Row Average 80,642
9	57,404			49,105		28,356			28,356		28,356			60,171		Row Average 41,958
6																Row Average #DIV/0!
3																Row Average #DIV/0!
0																Row Average #DIV/0!

Probe# 1	209090	Background 1	177	Probe# 2		Background 2	
Efficiency 1	260	RCT 1	TA Creason	Efficiency 2		RCT 2	KL Creason
Contact Eff. 1	0.0824			Contact Eff. 2			

Section Average 59,542

dpm/100cm^2

Count Time (s)	30

30

Unit	776011	Wall	7	Section	A	Date	5/12/04

Column # G-8						Column # G-7	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft)							Row Average #DIV/0!
12							Row Average #DIV/0!
9							Row Average #DIV/0!
6		100,284	89,218				Row Average 94,751
3			141,781				Row Average 141,781
0			4,570				Row Average 4,570

Probe# 1	209090	Background 1	191
Efficiency 1	260	RCT 1	TA Creason
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMNET 11/12/04

Section Average 83,964

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	8	Section	A	Date	5/12/04

Column # G-8						Column # H-8	
							Row Average #DIV/0!
							Row Average #DIV/0!
ELEV. (ft)							Row Average #DIV/0!
12							Row Average #DIV/0!
9							Row Average #DIV/0!
6	127,949	148,697	132,099	306,386			Row Average 178,783
3	293,937	275,955	285,637	378,314			Row Average 308,460
0	1,159,839	898,408	744,870	506,954			Row Average 827,518

Probe# 1	209090	Background 1	191
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2		Background 2	
Efficiency 2		RCT 2	
Contact Eff. 2			

Section Average 438,254

dpm/100cm^2

Count Time (s)	30

32

Unit	776011	Wall	9	Section	A	Date	5/10/04

Column #	H-8						G-8	Row Average
								#DIV/0!
								Row Average #DIV/0!
ELEV. (ft)								
12								Row Average #DIV/0!
9								Row Average #DIV/0!
6			44,955	104,434	169,446	69,853		Row Average 97,172
3			43,572	82,302		132,099		Row Average 85,991
0			4,570	4,570		4,570		Row Average 4,570

Probe# 1	209090	Background 1	165	Probe# 2	199765	Background 2	203
Efficiency 1	260	RCT 1	Kaczar	Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 1	0.0824			Contact Eff. 2	0.0800		

Section Average 66,037

dpm/100cm^2

Count Time (s)	30

33

Unit	776011	Wall	10	Section	A	Date	5/10/04

Column # G-8						Column # G-7	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft) 12							Row Average #DIV/0!
9							Row Average #DIV/0!
6	26,973						Row Average 26,973
3	96,135						Row Average 96,135
0	133,692						Row Average 133,692

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOE UP INSTRUMENT 11/12/04

Section Average
85,600

dpm/100cm^2

Count Time (s)	30

34

Unit	776011	Wall	11	Section	A	Date	5/10/04

Column # G-7						Column # H-7	Row Average
							#DIV/0!
							#DIV/0!
ELEV. (ft) 12							#DIV/0!
9							#DIV/0!
6			56,021	105,817	85,069	47,721	73,657
3			56,021	83,685	75,386	60,171	68,816
0			4,570	4,570	4,570	64,892	19,651

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average 54,041

dpm/100cm^2

Count Time (s)	30

35

Unit	776011	Wall	12	Section	A	Date	5/10/04

Column #	H-7						Column #	H-8	Row Average
									#DIV/0!
									Row Average #DIV/0!
ELEV. (ft)									Row Average #DIV/0!
12									Row Average #DIV/0!
9									Row Average 31,123
6						31,123			Row Average 24,207
3						24,207			Row Average 122,416
0						122,416			

Probe# 1	209090	Background 1	165	Probe# 2		Background 2	
Efficiency 1	260	RCT 1	Kaczar	Efficiency 2		RCT 2	
Contact Eff. 1	0.0824			Contact Eff. 2			

Section Average 59,248

dpm/100cm^2

Count Time (s)	30

36

Unit	776011	Wall	13	Section	A	Date	5/10/04

Column # H-8							Column # G-8	Row Average
								#DIV/0!
								#DIV/0!
ELEV. (ft)								
12								#DIV/0!
9								#DIV/0!
6			60,171	89,218	39,422	105,817		73,657
3			46,338	64,320	79,536	122,416		78,153
0			74,003	32,506	82,302	125,182		78,498

Probe# 1	209090	Background 1	165	Probe# 2		Background 2	
Efficiency 1	260	RCT 1	Kaczar	Efficiency 2		RCT 2	
Contact Eff. 1	0.0824			Contact Eff. 2			

Section Average 76,769

dpm/100cm^2

Count Time (s) 30

37

Unit	776011	Wall	14	Section	A	Date	5/10/04

Column # G-8							Column # G-7	Row Average
								#DIV/0!
								Row Average #DIV/0!
ELEV. (ft)								
12								Row Average #DIV/0!
9								Row Average #DIV/0!
6					4,570			Row Average 4,570
3								Row Average #DIV/0!
0								Row Average #DIV/0!

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average
4,570

dpm/100cm^2

Count Time (s)	30

38

Unit	776011	Wall	15	Section	A	Date	5/10/04

Column #	G-7						H-7	Row Average
								#DIV/0!
								Row Average #DIV/0!
ELEV. (ft)								
12								Row Average #DIV/0!
9								Row Average #DIV/0!
6			26,973	127,949	100,284	42,189		Row Average 74,349
3			67,087		150,081	46,338		Row Average 87,835
0			4,570		22,673	96,135		Row Average 41,126

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average 68,428

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	16	Section	A	Date	5/10/04

Column # H-7						Column # H-8	
							Row Average #DIV/0!
							Row Average #DIV/0!
ELEV. (ft) 12							Row Average #DIV/0!
9							Row Average #DIV/0!
6				4,570			Row Average 4,570
3							Row Average #DIV/0!
0							Row Average #DIV/0!

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	203
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/12/04

Section Average
4,570

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	17	Section	A	Date	5/10/04

Column # K-11						Column # L-11	Row Average
							#DIV/0!
							#DIV/0!
ELEV. (ft) 12							#DIV/0!
9							#DIV/0!
6							#DIV/0!
3			124,310	111,801	99,292		111,801
0			371,367	124,310	118,056		204,578

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	TA Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMNET 11/15/04

Section Average 158,189

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	18	Section	A	Date	5/10/04

Column # L-11						Column # L-12	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft) 12							Row Average #DIV/0!
9							Row Average #DIV/0!
6						42,386	Row Average 42,386
3						92,479	Row Average 92,479
0						93,037	Row Average 93,037

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	TA Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

Section Average 75,967

dpm/100cm^2

Count Time (s)	30

42

Unit	776011	Wall	19	Section	A	Date	5/10/04

Column # L-12						Column # K-12	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft) 12							Row Average #DIV/0!
9							Row Average #DIV/0!
6							Row Average #DIV/0!
3	133,692		130,565				Row Average 132,129
0	175,911		216,566				Row Average 196,238

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	TA Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	195
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/14/04

Section Average 164,183

dpm/100cm^2

Count Time (s)	30

43

Unit	776011	Wall	20	Section	A	Date	5/10/04

Column # K-12						Column # K-11	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft) 12							Row Average #DIV/0!
9							Row Average #DIV/0!
6							Row Average #DIV/0!
3	185,293						Row Average 185,293
0							Row Average #DIV/0!

Probe# 1	199757	Background 1	138	Probe# 2	199765	Background 2	195
Efficiency 1	280	RCT 1	TA Creason	Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 1	0.0790			Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/14/04

Section Average 185,293

dpm/100cm^2

Count Time (s)	30

44

Unit	776011	Wall	21	Section	A	Date	5/10/04

Column # K-12							Column # L-12	Row Average
								#DIV/0!
								Row Average #DIV/0!
ELEV. (ft) 12					2,100,041	2,431,423		Row Average 2,265,732
9					274,868	218,353		Row Average 246,610
6					156,700	143,856		Row Average 150,278
3					201,655	140,003		Row Average 170,829
0					133,692	72,710		Row Average 103,201

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	KL Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 1 1/15/04

Section Average
587,330

dpm/100cm^2

Count Time (s)	30

45

Unit	776011	Wall	22	Section	A	Date	5/10/04

	31,105	20,737	3,456	40,321	16,129	26,497	44,930	16,129	33,409	25,345	25,345	36,865	31,105	34,561	4,608	
Column #																Row Average 26,036
																Row Average #DIV/0!
L-12																L-13
ELEV. (ft) 12	53,946		56,515		53,946		47,524		47,524		47,524					Row Average 51,163
9	87,341		66,790		75,781		47,524		57,799		75,781					Row Average 68,503
6	25,689		50,093		73,212		79,635		78,350		82,203					Row Average 64,864
3					51,377		74,497		118,167		87,341					Row Average 82,846
0					53,946		47,691		78,964		75,837					Row Average 64,110

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	TA Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOE U[INSTRUMENT 11/15/04

Section Average 65,192

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	23	Section	A	Date	5/10/04

	3,095	24,193	28,801	20,737	33,409	61,058										Row Average 28,549
																Row Average #DIV/0!
Column # L-13															Column # K-13	
ELEV. (ft) 12		65,506														Row Average 65,506
9	68,075	55,230														Row Average 61,653
6	61,653	114,314														Row Average 87,983
3	98,901															Row Average 98,901
0	99,292															Row Average 99,292

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	KL Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMNETNT 11/15/04

Section Average 80,424

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	24	Section	A	Date	5/10/04

	10,368	17,281	28,801	17,281	10,368	36,865	10,368	25,345	20,737	28,801	36,865	23,041	34,561	3,095	3,095	
Column #																Row Average 20,458
K-13																Row Average #DIV/0!
ELEV. (ft)																Column # K-12
12	202,940		39,873			79,635			83,488		88,626			184,958		Row Average 113,253
9	39,817		37,248			50,093			60,368		66,790			102,754		Row Average 59,512
6	91,194		50,093			52,662			74,273		61,764			50,819		Row Average 63,468
3	95,048		59,084			78,964			74,273							Row Average 76,842
0	44,564		86,783			85,219			78,964							Row Average 73,883

Probe# 1	199757	Background 1	138
Efficiency 1	280	RCT 1	KL Creason
Contact Eff. 1	0.0790		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/15/04

Section Average 77,704

dpm/100cm^2

Count Time (s)	30

48

Unit	776011	Wall	25	Section	A	Date	5/12/04

Column # H-12						Column # G-12	Row Average
							#DIV/0!
							#DIV/0!
ELEV. (ft) 12							#DIV/0!
9							#DIV/0!
6			52,382	75,837	64,892		64,370
3						57,073	57,073
0						68,019	68,019

Probe# 1	209090	Background 1	191	Probe# 2	199765	Background 2	189
Efficiency 1	260	RCT 1	TA Creason	Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 1	0.0824			Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/15/14

Section Average 63,641

dpm/100cm^2

Count Time (s)	30

Unit	776011	Wall	26	Section	A	Date	5/12/04

Column # G-13						Column # G-12	
							Row Average #DIV/0!
							Row Average #DIV/0!
ELEV. (ft)							
12							Row Average #DIV/0!
9							Row Average #DIV/0!
6	86,783	94,601					Row Average 90,692
3	85,219	75,837					Row Average 80,528
0	77,401	46,128					Row Average 61,764

Probe# 1	209090	Background 1	191
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/15/04

Section Average
77,661

dpm/100cm^2

Count Time (s)	30

50

Unit	776011	Wall	27	Section	A	Date	5/10/04

Column # G-12						Column # H-12	Row Average
							#DIV/0!
							Row Average #DIV/0!
ELEV. (ft) 12							Row Average #DIV/0!
9							Row Average #DIV/0!
6							Row Average #DIV/0!
3	53,946						Row Average 53,946
0	53,946						Row Average 53,946

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMNET 11/15/04

Section Average 53,946

dpm/100cm^2

Count Time (s)	30

51

Unit	776011	Wall	28	Section	A	Date	5/10/04

Column #	H-12						Column #	H-13
ELEV. (ft)								
12								
9								
6								
3					71,236	90,602		
0					76,769	91,985		

Row Average #DIV/0!
Row Average #DIV/0!
Row Average #DIV/0!
Row Average #DIV/0!
Row Average #DIV/0!
Row Average 80,919
Row Average 84,377

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2		Background 2	
Efficiency 2		RCT 2	
Contact Eff. 2			

Section Average 82,648

dpm/100cm^2

Count Time (s)	30

52

Unit	776011	Wall	29	Section	A	Date	5/10/04

Column # H-13						Column # G-13	Row Average
							#DIV/0!
							#DIV/0!
ELEV. (ft) 12							#DIV/0!
9							#DIV/0!
6							#DIV/0!
3						96,135	96,135
0						43,000	43,000

Probe# 1	209090	Background 1	165
Efficiency 1	260	RCT 1	Kaczar
Contact Eff. 1	0.0824		

Probe# 2	199765	Background 2	189
Efficiency 2	230	RCT 2	FESSENDEN
Contact Eff. 2	0.0800		

FOLLOW UP INSTRUMENT 11/15/04

Section Average 69,567

dpm/100cm^2

Count Time (s)	30

53

Unit	776011	Wall	30	Section	A	Date	5/10/04

Column # G-13							Column # G-12	Row Average
								#DIV/0!
								#DIV/0!
ELEV. (ft)								
12								#DIV/0!
9								#DIV/0!
6								#DIV/0!
3						87,835		87,835
0						60,171		60,171

Probe# 1	209090	Background 1	165	Probe# 2		Background 2	
Efficiency 1	260	RCT 1	Kaczar	Efficiency 2		RCT 2	
Contact Eff. 1	0.0824			Contact Eff. 2			

Section Average 74,003

dpm/100cm^2

Count Time (s)	30

Total Surface Activity

Survey Area:	V	Survey Unit:	776011				
Meter Model:	NE Electra w/ DP6 Probe					Dates Counted:	11/19,20/04
Instrument #:	4067	3265	NA	NA	NA	A priori MDA:	94
Cal. Due Date:	3/2/05	12/17/04	NA	NA	NA	Avg. Local Bkgd	6.2
Efficiency (c/d):	0.226	0.217	NA	NA	NA	Avg. Efficiency	0.222

Sample Location #	RCT ID #	Inst. #	Instrument (cpm)	Local Bkgd (cpm)	(dpm/100 cm^2)
1	516311	4067	17	7.0	**45.1**
2	516311	4067	7	4.0	**13.5**
3	516311	4067	119	8.0	**501.1**
4	516311	4067	13	4.0	**40.6**
5	516311	4067	27	6.0	**94.8**
6	516311	4067	9	4.0	**22.6**
7	516311	4067	12	7.0	**22.6**
8	516311	4067	15	6.0	**40.6**
9	516311	4067	12	5.0	**31.6**
10	516311	4067	7	6.0	**4.5**
11	516311	4067	10	9.0	**4.5**
12	516311	4067	18	4.0	**63.2**
13	516311	4067	61	2.0	**266.4**
14	516311	4067	451	18.0	**1954.9**
15	711641	3265	27	2.0	**112.9**
16	711641	3265	14	4.0	**45.1**
17	711641	3265	13	6.0	**31.6**
18	711641	3265	72	8.0	**288.9**
19	711641	3265	13	11.0	**9.0**
20	711641	3265	308	10.0	**1345.4**
21	711641	3265	3	6.0	**-13.5**
22	711641	3265	30	3.0	**121.9**
23	711641	3265	62	5.0	**257.3**
24	711641	3265	12	3.0	**40.6**
25	711641	3265	15	3.0	**54.2**
26	711641	3265	32	7.0	**112.9**
27	711641	3265	85	9.0	**343.1**
28	711641	3265	159	9.0	**677.2**
29	711641	3265	5	7.0	**-9.0**
30	711641	3265	10	3.0	**31.6**
				MIN	**-13.5**
				MAX	**1954.9**
				MEAN	**218.5**
				SD	**428.2**

Removable Activity

Survey Area:		V	Survey Unit:		776011
Dates Counted:	11/19/04	11/20/04			
A priori MDA:	16				
Efficiency (c/d)	0.333				
Smear Location Number	Smear Results				
	RCT ID #	Serial Number	Gross (cpm)	Bkg.	(dpm/100 cm^2)
1	516311	811	1	0.4	2
2	516311	1352	3	0.6	7
3	516311	964	7	0.3	20
4	516311	1411	2	0.1	6
5	516311	811	6	0.4	17
6	516311	1352	1	0.6	1
7	516311	964	0	0.3	-1
8	516311	1411	4	0.1	12
9	516311	811	3	0.4	8
10	516311	1352	6	0.6	16
11	516311	964	3	0.3	8
12	516311	1411	20	0.1	60
13	516311	811	5	0.4	14
14	516311	1352	38	0.6	112
15	711756	811	1	0.1	3
16	711756	811	2	0.1	6
17	711756	811	1	0.1	3
18	711756	811	2	0.1	6
19	711756	811	3	0.1	9
20	711756	811	2	0.1	6
21	711756	811	2	0.1	6
22	711756	811	4	0.1	12
23	711756	811	1	0.1	3
24	711756	811	21	0.1	63
25	711756	811	33	0.1	99
26	711756	811	3	0.1	9
27	711756	811	2	0.1	6
28	711756	811	1	0.1	3
29	711756	811	1	0.1	3
30	711756	811	1	0.1	3
				MIN	-0.9
				MAX	**112.3**
				MEAN	**17.2**
				SD	28.1

Sample Location Number	NaI Activity Measurements				
	Measurement Used	Comment	Surface	Coating	(dpm/100 cm^2)
1	Sodium Iodide	N/A	wall	thin/no paint	31,349
2	Sodium Iodide	N/A	wall	thin/no paint	21,596
3	Sodium Iodide	N/A	wall	thin/no paint	38,117
4	Sodium Iodide	N/A	wall	thin/no paint	49,960
5	Sodium Iodide	N/A	wall	thin/no paint	62,101
6	Sodium Iodide	N/A	wall	thin/no paint	7,211
7	Sodium Iodide	N/A	wall	thin/no paint	7,211
8	Sodium Iodide	N/A	wall	thin/no paint	7,211
9	Sodium Iodide	N/A	wall	thin/no paint	7,211
10	Sodium Iodide	N/A	wall	thin/no paint	9,454
11	Sodium Iodide	N/A	wall	thin/no paint	7,211
12	Sodium Iodide	N/A	wall	thin/no paint	25,278
13	Sodium Iodide	N/A	wall	thin/no paint	32,842
14	Sodium Iodide	N/A	wall	thin/no paint	34,036
15	Sodium Iodide	N/A	wall	thin/no paint	41,003
16	Sodium Iodide	N/A	wall	thin/no paint	23,089
17	Sodium Iodide	N/A	wall	thin/no paint	14,530
18	Sodium Iodide	N/A	ceiling	thin/no paint	15,625
19	Sodium Iodide	N/A	ceiling	thin/no paint	13,435
20	Sodium Iodide	N/A	ceiling	thin/no paint	24,980
21	Sodium Iodide	N/A	ceiling	thin/no paint	11,345
22	Sodium Iodide	N/A	wall	thin/no paint	32,444
23	Sodium Iodide	N/A	ceiling	thin/no paint	15,028
24	Sodium Iodide	N/A	ceiling	thin/no paint	20,999
25	Sodium Iodide	N/A	ceiling	thin/no paint	19,407
26	Sodium Iodide	N/A	ceiling	thin/no paint	38,614
27	Sodium Iodide	N/A	ceiling	thin/no paint	91,659
28	Sodium Iodide	N/A	ceiling	thin/no paint	5,709
29	Sodium Iodide	N/A	ceiling	thin/no paint	5,709
30	Sodium Iodide	N/A	wall	thin/no paint	7,211
				MIN	**5,709**
				MAX	**91,659**
				AVERAGE	**24,052**
				SD	**19,327**

Data and Sodium Iodide Instrument Information

Survey Area:	V	Survey Unit:	776011	Survey Date(s):	12/05/04

Instrument Specifications

Instrument #	1	2
Meter Model:	Ludlum 2350-1	N/A
Meter Serial #:	201199	N/A
Detector Model:	Ludlum 44-17	N/A
Detector #:	199764	N/A
Detector Size (cm^2):	17.8	N/A
Calibration Due Date:	6/9/05	N/A
Count Time (min)	5	N/A
Contact Efficiency	9.20%	N/A

Ratio Used

Pu to Am - 241	8.1

Comments

In cases where the critical level is greater than the calculated dpm/100cm2, the critical level will be used for statistical analysis.

Count Times for backgrounds and samples are equal.

Attenuation Factors: Based on observation of Walls and Ceilings. Epoxy on Floor determined by chip sampling.

Background (Gross)

Instrument #	1	2
Gamma (Ceilings)	608	N/A
Gamma (Floors)	N/A	N/A
Gamma (Block Walls)	970	N/A
Gamma (Solid Walls)	N/A	N/A

Background (cpm)

Instrument #	1	2
Gamma (Ceilings)	121.6	N/A
Gamma (Floors)	N/A	N/A
Gamma (Block Walls)	194	N/A
Gamma (Metal Walls)	N/A	N/A

Efficiencies (cpm/dpm)

Instrument #	1	2
Thin/No Paint	0.091	N/A
Epoxy	0.074	N/A
Other	0.087	N/A

Coatings	Thickness (inches)
Thin/No Paint	0.007
Epoxy	0.250
Other	0.06

Total Activity Estimates Using Sodium Iodide Instruments

Survey Area:	V	Survey Unit:	776011	Survey Date(s):	12/15/04

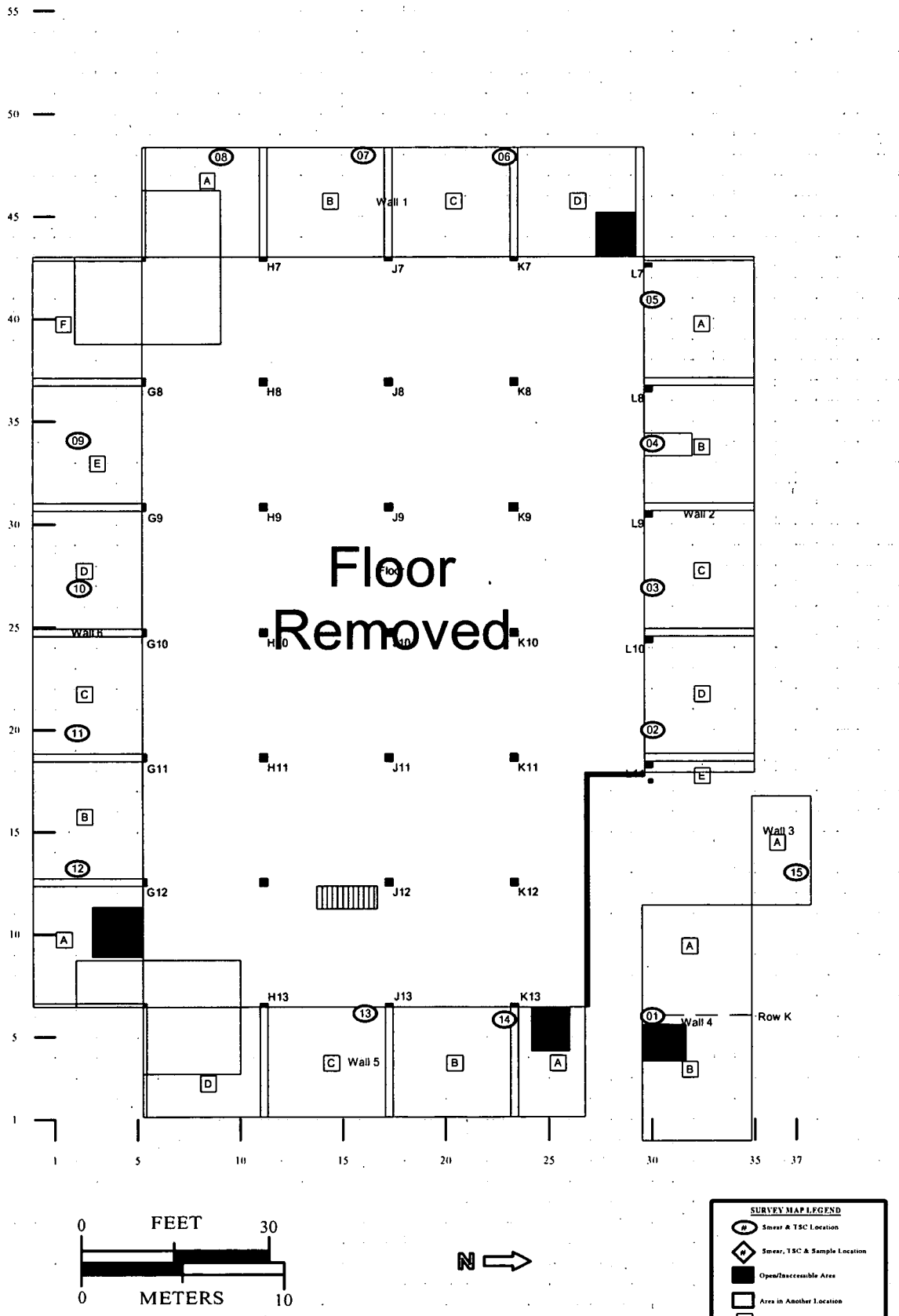
Sample Location #	RCT ID #	Instrument #	Gross Counts	Critical Level (dpm/cm2)	Total Alpha (dpm/cm2)
1	711641	1	1,285	7,211	31,349
2	711641	1	1,187	7,211	21,596
3	711641	1	1,353	7,211	38,117
4	711641	1	1,472	7,211	49,960
5	711641	1	1,594	7,211	62,101
6	711641	1	971	7,211	7,211
7	711641	1	860	7,211	7,211
8	711641	1	1,023	7,211	7,211
9	711756	1	1,040	7,211	7,211
10	711641	1	1,065	7,211	9,454
11	711641	1	985	7,211	7,211
12	711641	1	1,224	7,211	25,278
13	711641	1	1,300	7,211	32,842
14	711641	1	1,312	7,211	34,036
15	711641	1	1,382	7,211	41,003
16	711641	1	1,202	7,211	23,089
17	711641	1	1,116	7,211	14,530
18	711641	1	765	5,709	15,625
19	711641	1	743	5,709	13,435
20	711641	1	859	5,709	24,980
21	711641	1	722	5,709	11,345
22	711641	1	1,296	7,211	32,444
23	711641	1	759	5,709	15,028
24	711641	1	819	5,709	20,999
25	711641	1	803	5,709	19,407
26	711641	1	996	5,709	38,614
27	711641	1	1,529	5,709	91,659
28	711641	1	652	5,709	5,709
29	711641	1	654	5,709	5,709
30	711641	1	858	7,211	7,211

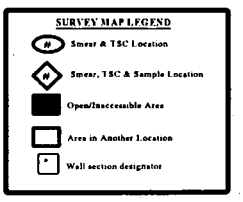
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 776 CLUSTER

Survey Area: 5 **Survey Unit: 776011** **Classification: NA**
Building: 776
Survey Unit Description: First floor area 5 unit 11

Total Floor Area: NA **Total Area: 1756 sq. m** **Grid Size: 7 x 7 sq.m**

SURVEY UNIT 776011 - MAP 1 OF 2



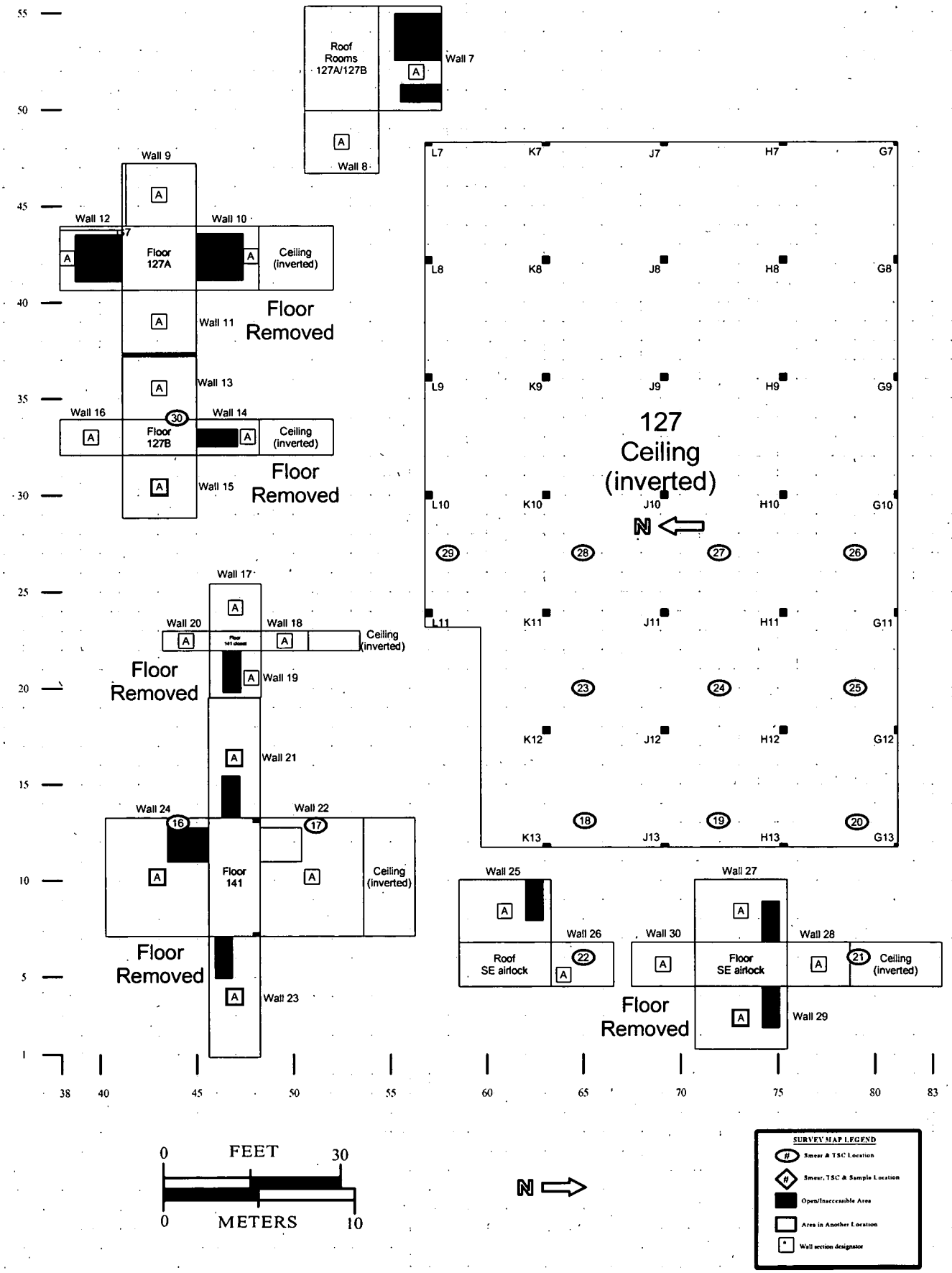


RADIOLOGICAL CLOSEOUT SURVEY FOR THE 776 CLUSTER

Survey Area: 5 **Survey Unit: 776011** **Classification: NA**
Building: 776
Survey Unit Description: First floor area 5 unit 11

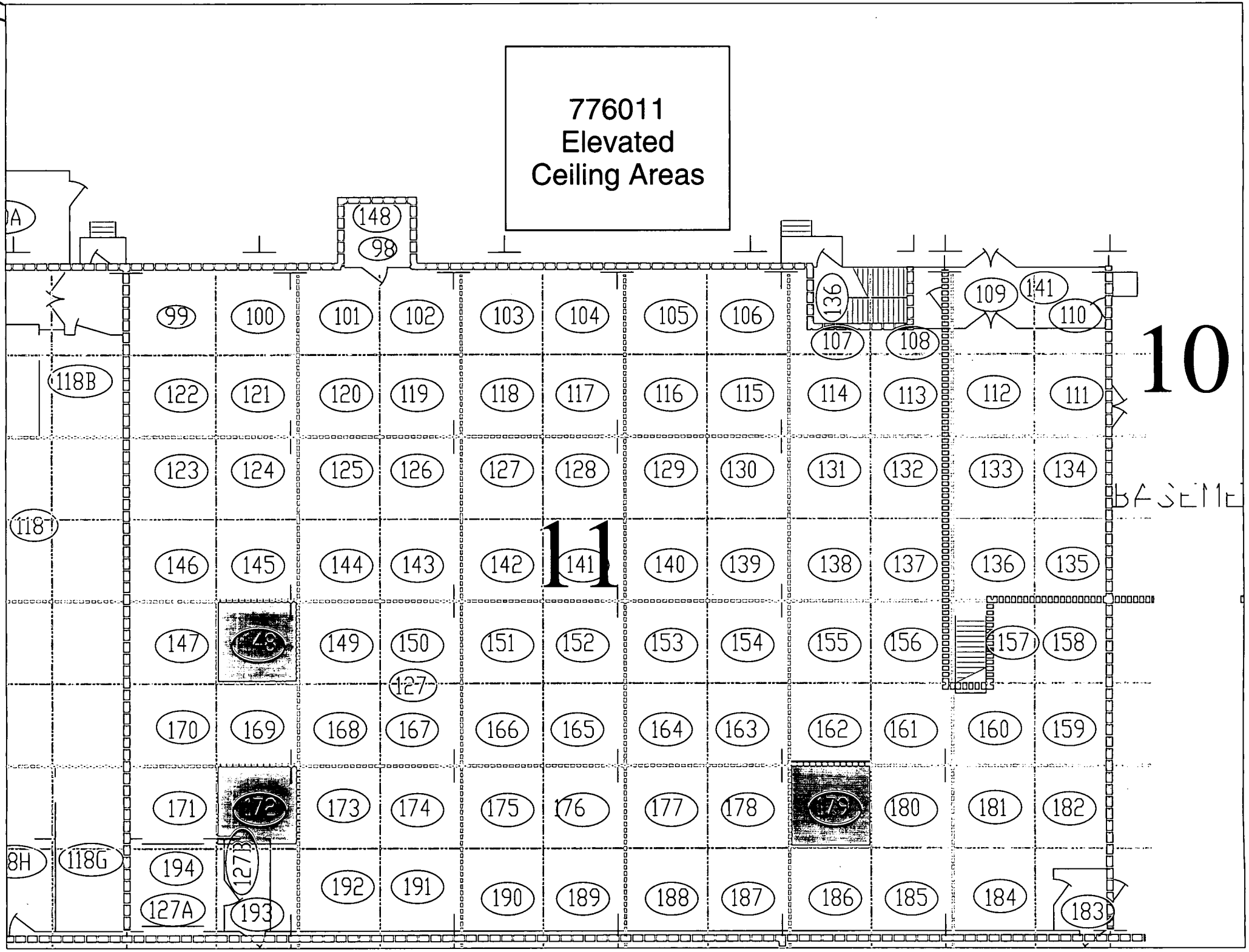
Total Floor Area: NA **Total Area: 1756 sq. m** **Grid Size: 7 x 7 sq.m**

SURVEY UNIT 776011 - MAP 2 OF 2



60

776011 Elevated Ceiling Areas



Attachment 1

Standard Method for Calculating the ASCV for Each Survey Unit

Prerequisites:

1. Final survey map for the survey unit
2. PDS survey results
3. Survey information used to estimate activities in inaccessible areas;
4. Survey information for any structural members or elevated regions not represented by the PDS survey.

Conversions:

1 square meter (m^2) = 100 x 100 cm^2

1 microcurie (μCi) = 2.22x 10^6 dpm

1 (μCi/ m^2) = 22,200 dpm/ 100cm^2 evenly distributed over one square meter.

12 inches = 1 foot = 0.305 meters

Calculations:

Accessible Area Inventory

1. Calculate the average surface contamination for the applicable survey unit from a minimum of 30 sodium iodide measurements obtained by the PDS survey.
2. Average the total surface contamination activity present.
3. Convert the average surface contamination value from step 2 from "dpm/ 100cm^2" to "μCi/ m^2"

   Example:

   22,200 dpm/100cm^2 x (100 x 100 cm^2/ m^2) x (1μCi/2.22x 10^6 dpm) = 1 μCi/ m^2

4. Obtain surface area of survey unit from title box of final survey map. This is reported in square meters.
5. Calculate inventory for accessible areas

   The surface area from a survey unit map title box is 1,000 square meters and the average contamination level from the 30 PDS points is 22,200 dpm/ 100cm^2.

   Example:

   1,000 m^2 x 22,200 dpm/ 100cm^2 x (100 x 100 cm^2/ m^2) x (1μCi/2.22x 10^6 dpm) = 1,000 μCi

Inaccessible Area Inventory

1. Document methods used to estimate contamination levels and potential inventory in seams, cracks or other surfaces in the final survey report. Provide an estimated remaining inventory for each item/area in the report.

   Example:

   There are 20 feet of seams contaminated to an average level of 2,220,000 dpm/100 cm^2. Each seam has two sides. The total inventory can be estimated assuming the contamination levels measured at the top of the seam extend down each side of the seam. The depth of the seam can be determined from design drawings or from direct observation as the seam is chipped away. If a seam is determined to be 4 inches deep, then the inventory of the seam can be calculated as follows:

   The contaminated area of the seam is:

   (20 feet x .305 m/ft) * (0.3 feet x 0.305 m/ft) = .61 m^2 x 2 sides = 1.22 m^2

   Therefore the inventory in the seam in μCi is:

   1.22 m^2 • (2,220,000 dpm/100 cm^2) • (10,000 cm^2/ m^{-2})* μCi /2.22E6 dpm = 122 μCi

Attachment 1

Calculating the ASCV

1. Sum the inventories from the inaccessible areas with the inventory for the accessible area to obtain a total inventory for the survey unit.

   Total Inventory = Accessible Inventory + Inaccessible inventory + Inventory items (areas not represented by other inventories listed i.e. Stairs, columns, etc)

   Example: 1000 μCi = accessible inventory

   122 μCi = inaccessible inventory

   100 μCi = inaccessible contamination in the columns and contamination on the stairs

   1000 + 122 + 100 = 1222 μCi

2. Divide the total inventory for the survey unit by the accessible area of the survey unit obtained from the final survey map.

   Example: 1222 μCi = total inventory

   1000 m2 = total surface area of the survey unit

   1222 μCi/1,000 m^2 = 1.22 μCi / m^2

   1.22 μCi /m^2 • (1m^2 /(100*100 cm^2)) * (2.22E6 dpm/μCi) = 27084 dpm/ 100cm^2