Survey Unit Release Record				
Design #	EP-PPH 105	**Revision #**	Original	**Page 1 of 3**
Survey Unit #(s)	PPH 105			
Description	1) Embedded Pipe (EP) Survey Unit PPH 105 meets the definition of embedded pipe for Plum Brook Reactor Facility (PBRF) for those portions of piping embedded in the building foundation walls (PPH and Hot Pipe Tunnel). The portion of piping which transits in soil under and between the buildings does not meet the criteria for embedded piping. The complete piping will be grouted, the portions embedded in the building structure will remain embedded for any future reuse, those portions in the ground can be released for unrestricted use. 2) EP PPH 105 is a Class 1, Group 1 survey unit as per the PBRF Final Status Survey Plan (FSSP) and Technical Basis Document (TBD)-06-004. 3) Surveys in EP PPH 105 were performed using a scintillation detector optimized to measure gamma energies representative of Co-60. Sample #EP 3-9 from Survey Request (SR)-13 was referenced for this decision. 4) Survey Instructions for this survey unit are incorporated into and performed in accordance with (IAW) the Babcock Services Incorporated (BSI)/LVS-002, Work Execution Package (WEP) 05-006. Survey instructions described in this document constitute "Special Methods" and the survey design used in the acquisition of survey measurements. 5) Instrument efficiency determinations are developed in accordance with the BSI/LVS-002, WEP 05-006, these determinations are appropriate for the types of radiation involved and the media being surveyed.			

Approval Signatures		**Date:**
FSS/Characterization Engineer	A. Wood	3/2/08
FSS/Characterization Manager	R. Case	3/6/08

Form
CS-09/1
Rev 0

1.0 History/Description

1.1 The subject pipe is an 8" air exhaust line from PPH Room 4 to the HPT.

1.2 EP PPH 105 consists of 8" diameter piping that is approximately 174 feet in length.

2.0 Survey Design Information

2.1 EP PPH 105 was surveyed IAW Procedure #BSI/LVS-002.

2.2 100% of the 8" pipe was accessible for survey. The accessible 8" pipe was surveyed by static measurement at one foot increments, for a total of 174 survey measurements.

2.3 Surface area for the 8" piping is 1946 cm^2 for each foot of piping, corresponding to a total 8" piping surface area of 338604 cm^2 (33.9 m^2) for the entire length of (approximately 174') of 8" piping.

3.0 Survey Unit Measurement Locations/Data

3.1 Pipe interior radiological survey forms are provided in Attachment 2 of this release record.

4.0 Survey Unit Investigations/Results

4.1 None

5.0 Data Assessment Results

5.1 Data assessment results are provided in the EP/Buried Pipe (BP) Survey Report provided in Attachment 1.

5.2 This survey unit was assessed as a building re-use scenario with all activity derived dose as a 100% Co60 nuclide distribution. This is the most conservative DCGL for the facility (11,000dpm/100cm^2).

5.3 When implementing the Unity Rule, provided in Section 3.6.3 of the FSSP, four survey measurements exceeded unity. The survey unit that is constituted by EP PPH 105 passes FSS after application of Elevated Measurement Comparisons (EMC) and Elevated Measurement Tests (EMT). The EMC Unity sum was 0.105 of unity, and the EMT Unity sum was 0.559 of unity.

5.4 DCGL's for the building reuse scenario are used to demonstrate compliance with the release criterion for this release record. The DCGL's for embedded pipe are not applied, therefore the Structural Area Factors listed in Table 3-5 of the FSS are the appropriate area factors for EMC and EMT evaluations.

5.5 The area factor of 40.2 was utilized for this survey unit, this is the appropriate area factor listed in Table 3-5 of the PBRF FSSP.

5.6 Background was not subtracted from the survey measurements.

5.7 Statistical Summary Table

Statistical Parameter	8" Pipe
Total Number of Survey Measurements	174
Number of Measurements >MDC	168
Number of Measurements Above 50% of DCGL	70
Number of Measurements Above DCGL	4
Mean	0.516
Median	0.436
Standard Deviation	0.235
Maximum	1.121
Minimum	0.062

6.0 Documentation of evaluations pertaining to compliance with the unrestricted use limit of 25 mrem/yr and dose contributions from Embedded Pipe and radionuclides contributing 10% in aggregate of the total dose for both structural scenarios and soils.

6.1 A review of the survey results has shown that the dose contribution for EP PPH 105 to be less than 25 mrem/yr. The dose contribution is estimated to be 12.9 mrem/yr based on the average of the actual gross counts measured.

7.0 Attachments

Attachment 1 – BSI EP/BP Survey Report
Attachment 2 – Pipe Interior Radiological Survey Form
Attachment 3 – DQA Worksheet
Attachment 4 – EP PPH 105 SURR & Spreadsheet Disc

SECTION 7
ATTACHMENT 1
6 PAGES

BSI EP/BP SURVEY REPORT

Pipe ID	PPH 105	Survey Location	HPT to PPH RM 4
Survey Date	5-18-06, 6-14-06, 6-15-06	2350-1 #	212223 / 203488
Survey Time	See Survey Sheets	Detector-Sled #	LVS1-107
Pipe Size	8"	Detector Efficiency	0.00015
DCGL (dpm/100cm2)	1.10E+04	Pipe Area Incorporated by Detector Efficiency (in cm2)	1946
Pipe Area Incorporated by Survey Data (m^2)	33.9	Field BKG (cpm)	See Survey Sheets
Routine Survey	X	Field MDCR (cpm)	See Survey Sheets
QA Survey		Nominal MDC (dpm/100cm2)	3,394

Survey Measurement Results	
Total Number of Survey Measurements	174
Number of Measurements >MDC	168
Number of Measurements Above 50% DCGL	70
Number of Measurements Above DCGL	4
Mean	0.516
Median	0.436
Standard Deviation	0.235
Maximum	1.121
Minimum	0.062

Survey Technician(s)	STOCK

Survey Unit Classification	1
TBD 06-004 Piping Group	1
SR-13 Radionuclide Distribution Sample	EP 3-9
Measured Nuclide	Co-60
Area Factor/EMC Used	Yes
Pass/Fail FSS	Pass
MREM/YR Contribution	<25

COMMENTS:

ACTIVITY VALUES NOT BACKGROUND CORRECTED.

RP Engineer | Date	DWood / 3-2-08

PPH 105
8" Pipe
TBD 06-004 Group 1

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Unity	EMC Unity	EMT Unity	
1	15	15	100,000	5,139	0.467		0.467	
2	21	21	140,000	7,194	0.654		0.654	
3	16	16	106,667	5,481	0.498		0.498	
4	13	13	86,667	4,454	0.405		0.405	
5	19	19	126,667	6,509	0.592		0.592	
6	17	17	113,333	5,824	0.529		0.529	
7	17	17	113,333	5,824	0.529		0.529	
8	13	13	86,667	4,454	0.405		0.405	
9	13	13	86,667	4,454	0.405		0.405	
10	10	10	66,667	3,426	0.311		0.311	
11	11	11	73,333	3,768	0.343		0.343	
12	12	12	80,000	4,111	0.374		0.374	
13	15	15	100,000	5,139	0.467		0.467	
14	14	14	93,333	4,796	0.436		0.436	
15	18	18	120,000	6,166	0.561		0.561	
16	17	17	113,333	5,824	0.529		0.529	
17	16	16	106,667	5,481	0.498		0.498	
18	18	18	120,000	6,166	0.561		0.561	
19	20	20	133,333	6,852	0.623		0.623	
20	12	12	80,000	4,111	0.374		0.374	
21	22	22	146,667	7,537	0.685		0.685	
22	15	15	100,000	5,139	0.467		0.467	
23	12	12	80,000	4,111	0.374		0.374	
24	18	18	120,000	6,166	0.561		0.561	
25	12	12	80,000	4,111	0.374		0.374	
26	22	22	146,667	7,537	0.685		0.685	
27	17	17	113,333	5,824	0.529		0.529	
28	20	20	133,333	6,852	0.623		0.623	
29	22	22	146,667	7,537	0.685		0.685	
30	17	17	113,333	5,824	0.529		0.529	
31	24	24	160,000	8,222	0.747		0.747	
32	20	20	133,333	6,852	0.623		0.623	
33	19	19	126,667	6,509	0.592		0.592	
34	21	21	140,000	7,194	0.654		0.654	
35	17	17	113,333	5,824	0.529		0.529	
36	32	32	213,333	10,963	0.997		0.997	
37	30	30	200,000	10,277	0.934		0.934	
38	29	29	193,333	9,935	0.903		0.903	
39	33	33	220,000	11,305	1.028	0.026		0.013

PPH 105
8" Pipe
TBD 06-004 Group 1

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Unity	EMC Unity	EMT Unity	
40	31	31	206,667	10,620	0.965		0.965	
41	29	29	193,333	9,935	0.903		0.903	
42	15	15	100,000	5,139	0.467		0.467	
43	29	29	193,333	9,935	0.903		0.903	
44	26	26	173,333	8,907	0.810		0.810	
45	22	22	146,667	7,537	0.685		0.685	
46	32	32	213,333	10,963	0.997		0.997	
47	30	30	200,000	10,277	0.934		0.934	
48	21	21	140,000	7,194	0.654		0.654	
49	29	29	193,333	9,935	0.903		0.685	
50	33	33	220,000	11,305	1.028	0.026		0.013
51	30	30	200,000	10,277	0.934		0.934	
52	36	36	240,000	12,333	1.121	0.028		0.015
53	32	32	213,333	10,963	0.997		0.997	
54	28	28	186,667	9,592	0.872		0.997	
55	25	25	166,667	8,565	0.779		0.872	
56	23	23	153,333	7,879	0.716		0.779	
57	30	30	200,000	10,277	0.934		0.716	
58	30	30	200,000	10,277	0.934		0.934	
59	26	26	173,333	8,907	0.810		0.934	
60	25	25	166,667	8,565	0.779		0.810	
61	29	29	193,333	9,935	0.903		0.779	
62	20	20	133,333	6,852	0.623		0.903	
63	27	27	180,000	9,250	0.841		0.623	
64	29	29	193,333	9,935	0.903		0.841	
65	24	24	160,000	8,222	0.747		0.747	
1	14	14	93,333	4,796	0.436		0.436	
2	14	14	93,333	4,796	0.436		0.436	
3	13	13	86,667	4,454	0.405		0.405	
4	12	12	80,000	4,111	0.374		0.374	
5	13	13	86,667	4,454	0.405		0.405	
6	13	13	86,667	4,454	0.405		0.405	
7	8	8	53,333	2,741	0.249		0.249	
8	18	18	120,000	6,166	0.561		0.561	
9	21	21	140,000	7,194	0.654		0.654	
10	14	14	93,333	4,796	0.436		0.436	
11	10	10	66,667	3,426	0.311		0.311	
12	12	12	80,000	4,111	0.374		0.374	
13	17	17	113,333	5,824	0.529		0.529	
14	12	12	80,000	4,111	0.374		0.374	

PPH 105
8" Pipe
TBD 06-004 Group 1

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Unity	EMC Unity	EMT Unity	
15	10	10	66,667	3,426	0.311		0.311	
16	21	21	140,000	7,194	0.654		0.654	
17	24	24	160,000	8,222	0.747		0.747	
18	18	18	120,000	6,166	0.561		0.561	
19	15	15	100,000	5,139	0.467		0.467	
20	15	15	100,000	5,139	0.467		0.467	
21	15	15	100,000	5,139	0.467		0.467	
22	14	14	93,333	4,796	0.436		0.436	
23	26	26	173,333	8,907	0.810		0.810	
24	27	27	180,000	9,250	0.841		0.841	
25	28	28	186,667	9,592	0.872		0.872	
1	14	14	93,333	4,796	0.436		0.436	
2	10	10	66,667	3,426	0.311		0.311	
3	9	9	60,000	3,083	0.280		0.280	
4	9	9	60,000	3,083	0.280		0.280	
5	10	10	66,667	3,426	0.311		0.311	
6	14	14	93,333	4,796	0.436		0.436	
7	7	7	46,667	2,398	0.218		0.218	
8	11	11	73,333	3,768	0.343		0.343	
9	11	11	73,333	3,768	0.343		0.343	
10	16	16	106,667	5,481	0.498		0.498	
11	7	7	46,667	2,398	0.218		0.218	
12	6	6	40,000	2,055	0.187		0.187	
13	11	11	73,333	3,768	0.343		0.343	
14	10	10	66,667	3,426	0.311		0.311	
15	8	8	53,333	2,741	0.249		0.249	
16	10	10	66,667	3,426	0.311		0.311	
17	9	9	60,000	3,083	0.280		0.280	
18	11	11	73,333	3,768	0.343		0.343	
19	14	14	93,333	4,796	0.436		0.436	
20	10	10	66,667	3,426	0.311		0.311	
21	11	11	73,333	3,768	0.343		0.343	
22	15	15	100,000	5,139	0.467		0.467	
23	11	11	73,333	3,768	0.343		0.343	
24	12	12	80,000	4,111	0.374		0.374	
1	10	10	66,667	3,426	0.311		0.311	
2	16	16	106,667	5,481	0.498		0.498	
3	13	13	86,667	4,454	0.405		0.405	
4	6	6	40,000	2,055	0.187		0.187	
5	12	12	80,000	4,111	0.374		0.374	

PPH 105
8" Pipe
TBD 06-004 Group 1

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Unity	EMC Unity	EMT Unity	
6	13	13	86,667	4,454	0.405		0.405	
7	11	11	73,333	3,768	0.343		0.343	
8	10	10	66,667	3,426	0.311		0.311	
9	9	9	60,000	3,083	0.280		0.280	
10	17	17	113,333	5,824	0.529		0.529	
11	12	12	80,000	4,111	0.374		0.374	
12	13	13	86,667	4,454	0.405		0.405	
13	13	13	86,667	4,454	0.405		0.405	
14	10	10	66,667	3,426	0.311		0.311	
15	7	7	46,667	2,398	0.218		0.218	
16	10	10	66,667	3,426	0.311		0.311	
17	2	2	13,333	685	0.062		0.062	
18	11	11	73,333	3,768	0.343		0.343	
19	15	15	100,000	5,139	0.467		0.467	
20	13	13	86,667	4,454	0.405		0.405	
21	12	12	80,000	4,111	0.374		0.374	
22	11	11	73,333	3,768	0.343		0.343	
23	14	14	93,333	4,796	0.436		0.436	
24	14	14	93,333	4,796	0.436		0.436	
25	7	7	46,667	2,398	0.218		0.218	
26	8	8	53,333	2,741	0.249		0.249	
27	12	12	80,000	4,111	0.374		0.374	
28	8	8	53,333	2,741	0.249		0.249	
29	10	10	66,667	3,426	0.311		0.311	
30	12	12	80,000	4,111	0.374		0.374	
31	8	8	53,333	2,741	0.249		0.249	
32	11	11	73,333	3,768	0.343		0.343	
33	8	8	53,333	2,741	0.249		0.249	
34	6	6	40,000	2,055	0.187		0.187	
35	9	9	60,000	3,083	0.280		0.280	
36	12	12	80,000	4,111	0.374		0.374	
37	10	10	66,667	3,426	0.311		0.311	
38	10	10	66,667	3,426	0.311		0.311	
39	16	16	106,667	5,481	0.498		0.498	
40	9	9	60,000	3,083	0.280		0.280	
41	13	13	86,667	4,454	0.405		0.405	
42	10	10	66,667	3,426	0.311		0.311	
43	19	19	126,667	6,509	0.592		0.592	
44	10	10	66,667	3,426	0.311		0.311	
45	9	9	60,000	3,083	0.280		0.280	

PPH 105
8" Pipe
TBD 06-004 Group 1

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Unity	EMC Unity	EMT Unity	
46	12	12	80,000	4,111	0.374		0.374	
47	18	18	120,000	6,166	0.561		0.561	
48	11	11	73,333	3,768	0.343		0.343	
49	10	10	66,667	3,426	0.311		0.311	
50	14	14	93,333	4,796	0.436		0.436	
51	7	7	46,667	2,398	0.218		0.218	
52	22	22	146,667	7,537	0.685		0.343	
53	17	17	113,333	5,824	0.529		0.685	
54	34	34	226,667	11,648	1.059	0.026		0.014
55	30	30	200,000	10,277	0.934		0.934	
56	30	30	200,000	10,277	0.934		0.934	
57	24	24	160,000	8,222	0.747		0.934	
58	21	21	140,000	7,194	0.654		0.747	
59	31	31	206,667	10,620	0.965		0.965	
60	32	32	213,333	10,963	0.997		0.997	
				5,538		**0.105**	**0.559**	
				MEAN	0.516	**EMC Unity**	**EMT Unity**	
				MEDIAN	0.436			
				STD DEV	0.235			
				MAX	1.121			
				MIN	0.062			

SECTION 7
ATTACHMENT 2
14 PAGES

Pipe Interior Radiological Survey Form

Date: 5/18/06 Time: 1027

Pipe ID#: PPH - 105 Pipe Diameter: 8" Access Point Area: HOT PIPE TUNNEL ~~FAN HOUSE - 12'~~

Building: FAN HOUSE Elevation: -12' System: AIR EXHAUST

Type of Survey Investigation ____ Characterization ____ Final Survey X Other X

Gross ____ Co60 ✓ Cs ____

Detector ID# / Sled ID# BICRON IMG1 LVS-1 / 107

Detector Cal Date: 12/20/05 Detector Cal Due Date: 12/20/06

Instrument: 2350-1 Instrument ID #: 212223

Instrument Cal Date: 11/7/05 Instrument Cal Due Date: 11/7/06

From the Daily Pipe Survey Detector Control Form for the Selected Detector

Background Value 22 cpm

$MDCR_{static}$ 19.2 cpm

Efficiency Factor for Pipe Diameter 0.00015 (from detector efficiency determination)

MDC_{static} 3394 dpm/ 100 cm^2

Is the MDC_{static} acceptable? (Yes) No (if no, adjust sample count time and recalculate $MDCR_{static}$)

Comments: INITIAL SURVEY
EP3-7

Technician Signature

Pipe Interior Radiological Survey

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm²
1	1	1	15	15	n/a	n/a
2	2	↓	21	21	↓	↓
3	3		16	16		
4	4		13	13		
5	5		19	19		
6	6		17	17		
7	7		17	17		
8	8		13	13		
9	9		13	13		
10	10	↓	10	10	↓	↓

Pipe Interior Radiological Survey Form (Continuation Form)

Date: 5/18/06
Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: FAN HOUSE -12'
Building: FAN HOUSE Elevation: -12' System: AIR EXHAUST

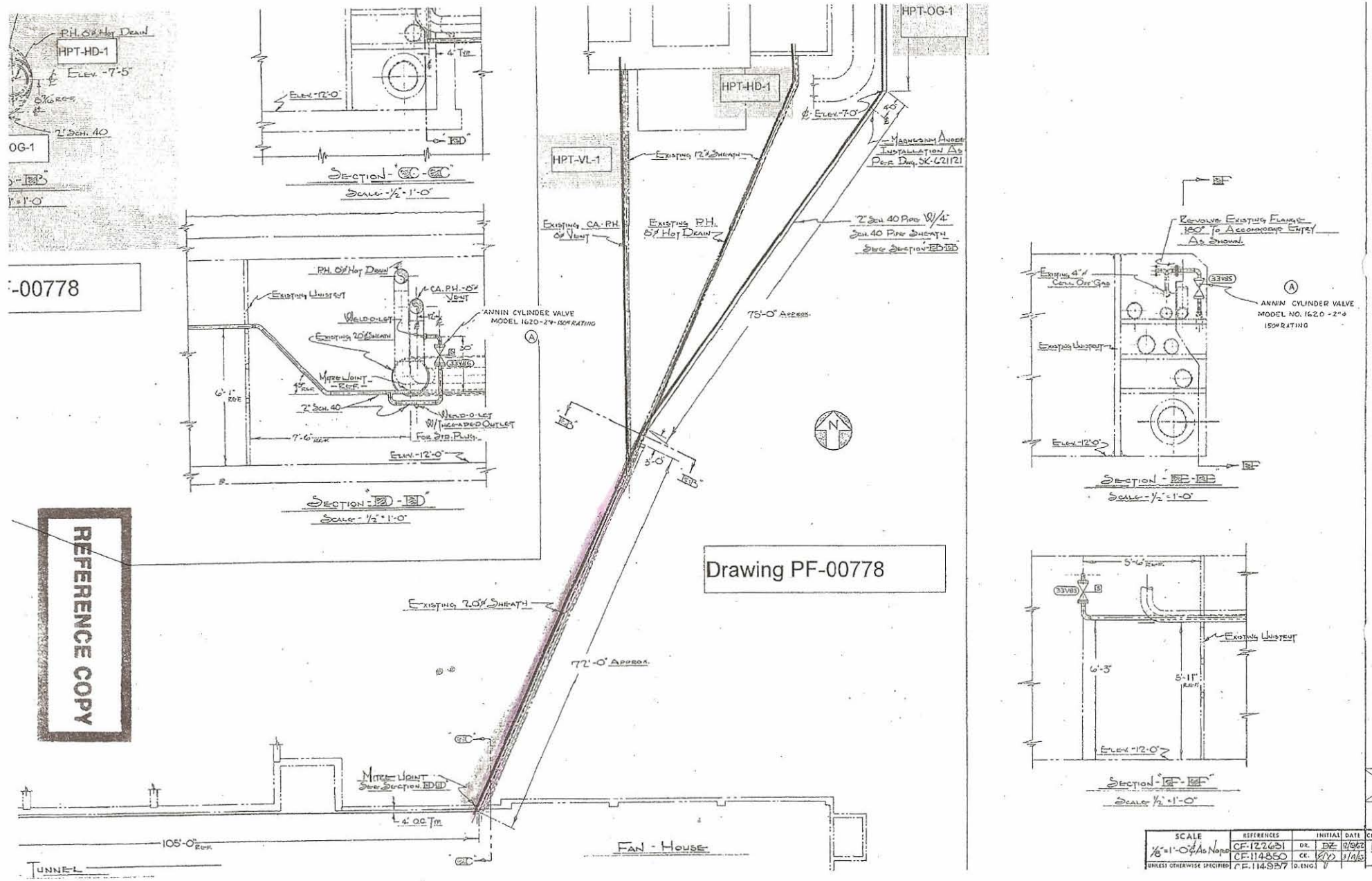
Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm^2
11	11	1	11	11	N/A	N/A
12	12		12	12		
13	13		15	15		
14	14		14	14		
15	15		18	18		
16	16		17	17		
17	17		16	16		
18	18		18	18		
19	19		20	20		
20	20		12	12		
21	21		22	22		
22	22		15	15		
23	23		12	12		
24	24		18	18		
25	25		12	12		
26	26		22	22		
27	27		17	17		
28	28		20	20		
29	29		22	22		
30	30		17	17		
31	31		24	24		
32	32		20	20		
33	33		19	19		
34	34		21	21		
35	35		17	17		
36	36		32	32		
37	37		30	30		
38	38		29	29		
39	39		33	33		
40	40		31	31		
41	41		29	29		
42	42		15	15		
43	43		29	29		
44	44		26	26		
45	45		22	22		

Pipe Interior Radiological Survey Form (Continuation Form)

Date: 5/18/06
Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: FAN HOUSE '12'
Building: FAN HOUSE Elevation: -12' System: AIR EXHAUST

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm^2
46	46	1	32	32	n/a	n/a
47	47		30	30		
48	48		21	21		
49	49		29	29		
50	50		33	33		
51	51		30	30		
52	52		36	36		
53	53		32	32		
54	54		28	28		
55	55		25	25		
56	56		23	23		
57	57		30	30		
58	58		30	30		
59	59		26	26		
60	60		25	25		
61	61		29	29		
62	62		20	20		
63	63		27	27		
64	64		29	29		
65	65		24	24		

N/A


HPT-HD-1
HPT-OG-1
HPT-VL-1
Elev -7'-5"
Elev -12'-0"
Elev -7'-0"
Section - EC - EC
Scale - ½" = 1'-0"
P.H. 6" Hot Drain
Existing Unistrut
Ca. P.H. - 6" Vent
Weld-o-let
Existing 20" Sheath
Annin Cylinder Valve
Model 1620-24-150 Rating
Miter Joint - Ref.
2" Sch. 40
Weld-o-let w/ Threaded Outlet For Std. Plug
Section - ED - ED
Scale - ½" = 1'-0"
Existing 12" Sheath
Existing Ca. P.H. 6" Vent
Existing P.H. 6" Hot Drain
2" Sch. 40 Pipe w/ 4" Sch. 40 Pipe Sheath
Magnesium Anode Installation As Per Dwg. SK-621121
75'-0" Approx.
77'-0" Approx.
Existing 20" Sheath
Miter Joint
105'-0" Ref.
Tunnel
Fan - House
Revolve Existing Flange 180° To Accommodate Entry As Shown.
Existing 4" Cath. Off Gas
Section - EE - EE
Scale - ½" = 1'-0"
5'-0" Ref.
6'-3"
5'-11" Ref.
Section - EF - EF
Scale ½" = 1'-0"
Drawing PF-00778
REFERENCE COPY
-00778
Scale 1/8"=1'-0" As Noted
References CF-122631 CF-114850 CF-114957
Initial DR. BE CK. 6/10 D. ENG
Date 10/96 3/1/13
Change NA
A
= Pipe Served
Page 4 of 4

Pipe Interior Radiological Survey Form

Date: 6/14/06 Time: 1251

Pipe ID#: PPH - 105 Pipe Diameter: 8" Access Point Area: PPH Rm #4

Building: PPH Elevation: -3 System: AIR EXHAUST

Type of Survey Investigation _____ Characterization _____ Final Survey X Other ✓

Gross _____ Co60 ✓ Cs _____

Detector ID# / Sled ID# BICRON IMG1 LVS-11 107

Detector Cal Date: 12/20/05 Detector Cal Due Date: 12/20/06

Instrument: 2350-1 Instrument ID #: 203488

Instrument Cal Date: 11/17/05 Instrument Cal Due Date: 11/17/06

From the Daily Pipe Survey Detector Control Form for the Selected Detector

Background Value 17.7 cpm

$MDCR_{static}$ 17.5 cpm

Efficiency Factor for Pipe Diameter 0.00015 (from detector efficiency determination)

MDC_{static} 3394 dpm/ 100 cm^2

Is the MDC_{static} acceptable? (Yes) No (if no, adjust sample count time and recalculate $MDCR_{static}$)

Comments: CONTINUATION SURVEY

Technician Signature _____

Pipe Interior Radiological Survey

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm²
1	1	1	14	14	n/a	n/a
2	2	↓	14	14	↓	↓
3	3		13	13		
4	4		12	12		
5	5		13	13		
6	6		13	13		
7	7		8	8		
8	8		18	18		
9	9		21	21		
10	10		14	14		

Pipe Interior Radiological Survey Form (Continuation Form)

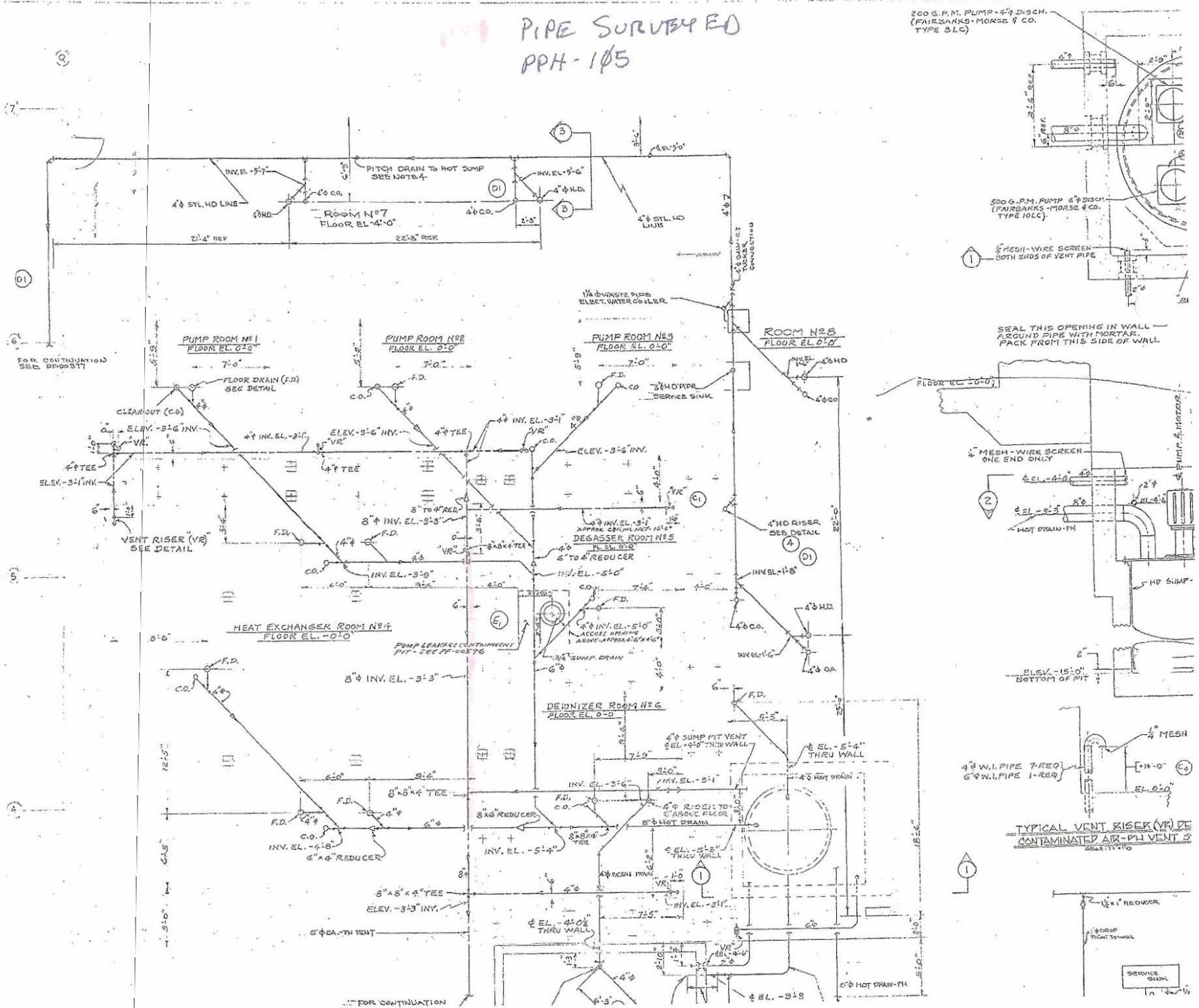
Date: 6/14/06
Pipe ID#: PPH -105 Pipe Diameter: 8" Access Point Area: PPH Rm #4
Building: PPH Elevation: -3' System: Air Exhaust

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm^2
11	11	1	10	10	n/a	n/a
12	12	↓	12	12	↓	↓
13	13		17	17		
14	14		12	12		
15	15		10	10		
16	16		21	21		
17	17		24	24		
18	18		18	18		
19	19		15	15		
20	20		15	15		
21	21		15	15		
22	22		14	14		
23	23		26	26		
24	24		27	27		
25	25		28	28		
26	26	✓	N/A	N/A	↓	↓

N

A

PIPE SURVEYED
PPH-105



REFERENCE COPY

PAGE 3 of 3

Pipe Interior Radiological Survey Form

Date: 6/14/06 Time: 1335

Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: PPH Rm # 4

Building: PPH Elevation: -3 System: AIR EXHAUST

Type of Survey Investigation ____ Characterization ____ Final Survey X Other ✓

Gross ____ Co60 ✓ Cs ____

Detector ID# / Sled ID# BICRON IMG1 LVS-1 / 107

Detector Cal Date: 12/20/05 Detector Cal Due Date: 12/20/06

Instrument: 2350-1 Instrument ID #: 203488

Instrument Cal Date: 11/17/05 Instrument Cal Due Date: 11/17/06

From the Daily Pipe Survey Detector Control Form for the Selected Detector

Background Value 17.7 cpm

$MDCR_{static}$ 17.5 cpm

Efficiency Factor for Pipe Diameter 0.00015 (from detector efficiency determination)

MDC_{static} 3394 dpm/ 100 cm^2

Is the MDC_{static} acceptable? (Yes) No (if no, adjust sample count time and recalculate $MDCR_{static}$)

Comments: CONTINUATION SURVEY

Technician Signature

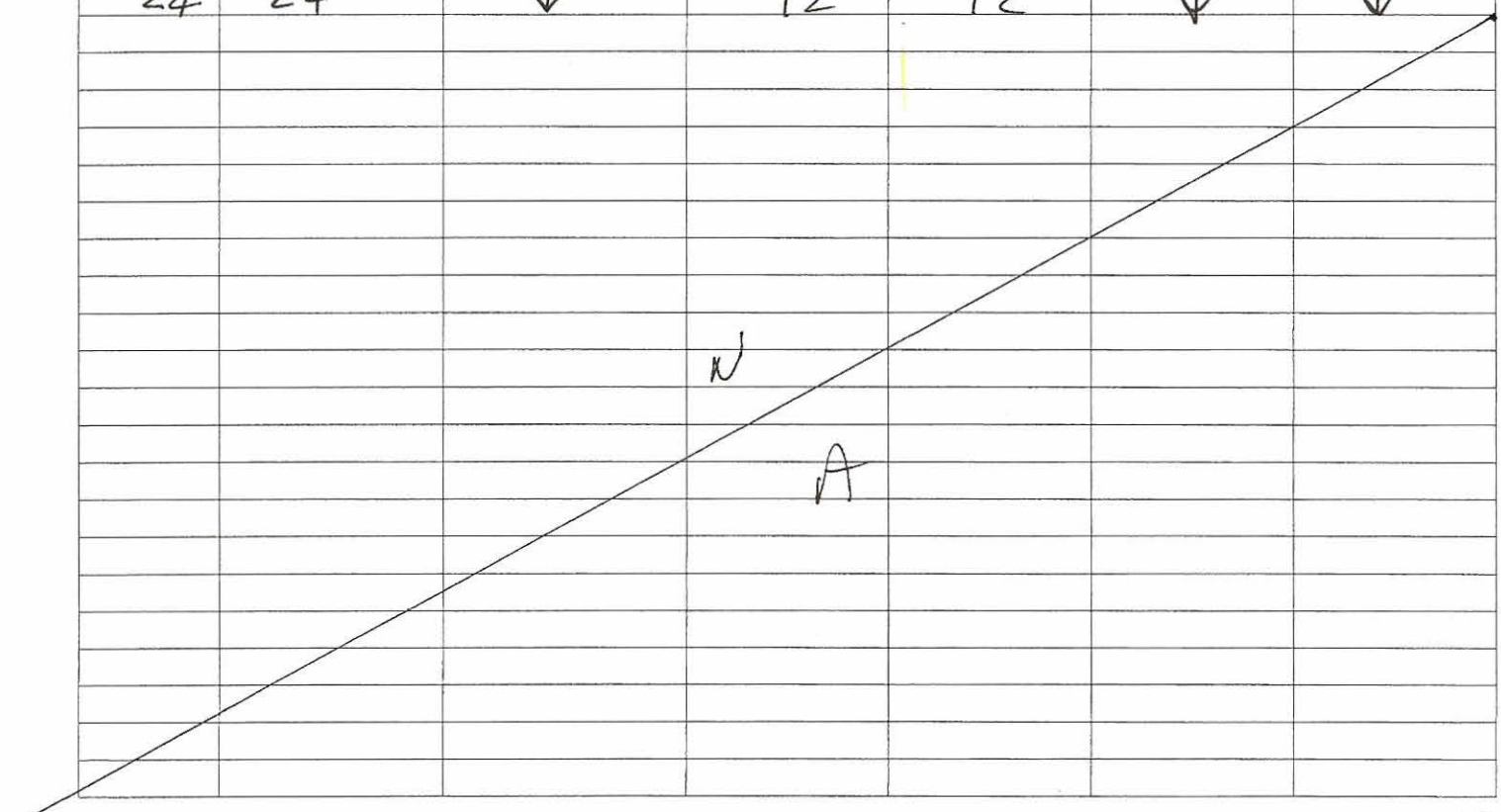
Pipe Interior Radiological Survey

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm²
1	1	1	14	14	n/a	n/a
2	2		10	10		
3	3		9	9		
4	4		9	9		
5	5		10	10		
6	6		14	14		
7	7		7	7		
8	8		11	11		
9	9		11	11		
10	10		16	16		

Pipe Interior Radiological Survey Form (Continuation Form)

Date: 6/14/06
Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: PPH Rm #4
Building: PPH Elevation: -3' System: AIR EXHAUST

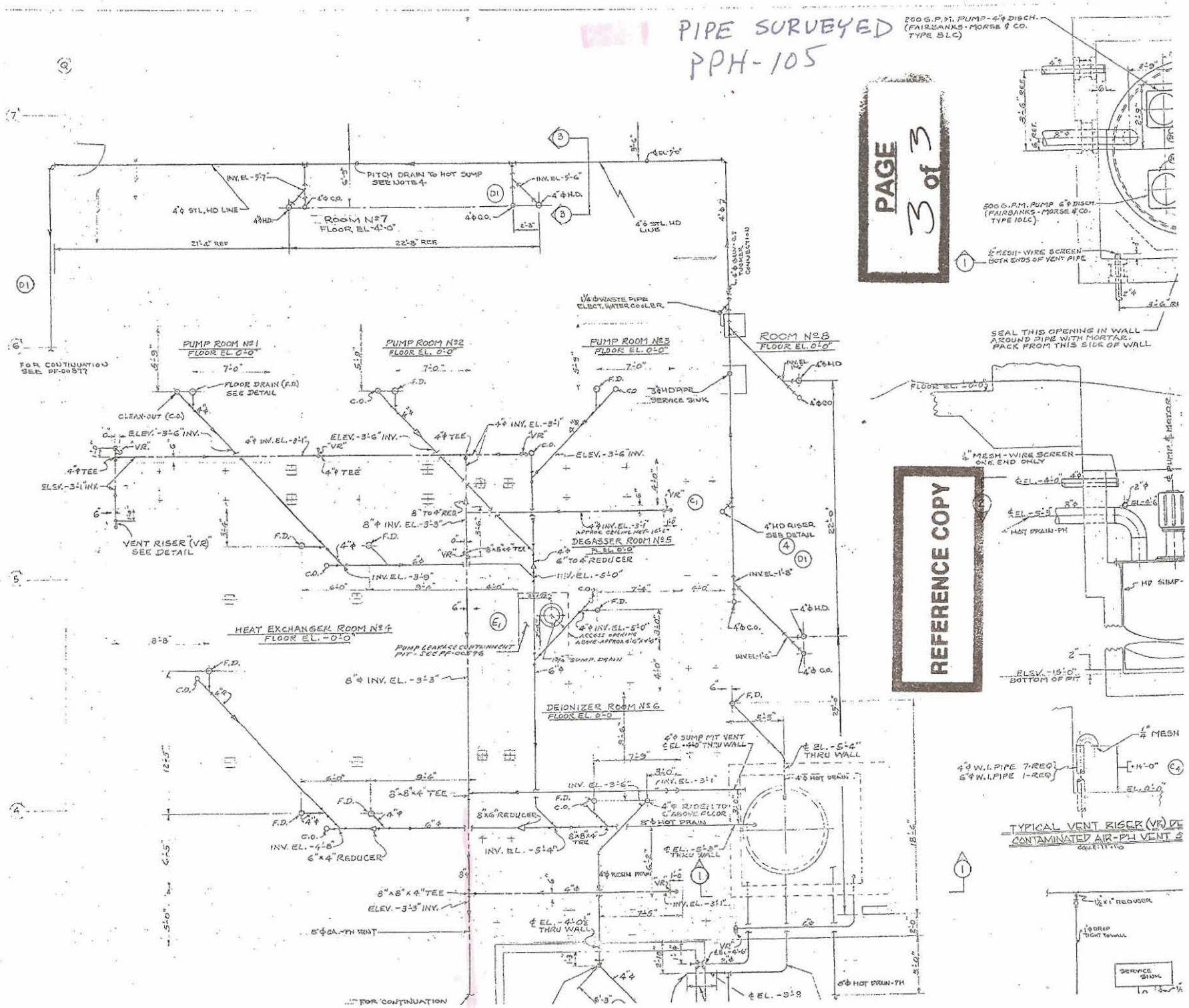
Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm^2
11	11	1	7	7	n/a	n/a
12	12	↓	6	6	↓	↓
13	13		11	11		
14	14		10	10		
15	15		8	8		
16	16		10	10		
17	17		9	9		
18	18		11	11		
19	19		14	14		
20	20		10	10		
21	21		11	11		
22	22		15	15		
23	23		11	11		
24	24		12	12		



PIPE SURVEYED
PPH-105

PAGE 3 of 3

REFERENCE COPY



Pipe Interior Radiological Survey Form

Date: 6/15/06 Time: 1116

Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: PPH Rm #4

Building: PPH Elevation: Ø System: AIR EXHAUST

Type of Survey Investigation _____ Characterization _____ Final Survey X Other _____

Gross _____ Co60 ✓ Cs _____

Detector ID# / Sled ID# BICRON1M61 LUS-1 / 107

Detector Cal Date: 12-20-05 Detector Cal Due Date: 12-20-06

Instrument: 2350-1 Instrument ID #: 203488

Instrument Cal Date: 11/17/05 Instrument Cal Due Date: 11/17/06

From the Daily Pipe Survey Detector Control Form for the Selected Detector

Background Value 17.9 cpm

$MDCR_{static}$ 17.6 cpm

Efficiency Factor for Pipe Diameter 0.00015 (from detector efficiency determination)

MDC_{static} 3394 dpm/ 100 cm^2

Is the MDC_{static} acceptable? (Yes) No (if no, adjust sample count time and recalculate $MDCR_{static}$)

Comments: CONTINUATION SURVEY EP3-7 COMPLETE

Technician Signature

Pipe Interior Radiological Survey

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm²
1	25	1	10	10	n/a	n/a
2	26	↓	16	16	↓	↓
3	27		13	13		
4	28		6	6		
5	29		12	12		
6	30		13	13		
7	31		11	11		
8	32		10	10		
9	33		9	9		
10	34	↓	17	17	↓	↓

Pipe Interior Radiological Survey Form (Continuation Form)

Date: 6/15/06
Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: PPH Rm #4
Building: PPH Elevation: 0' System: AIR EXHAUST

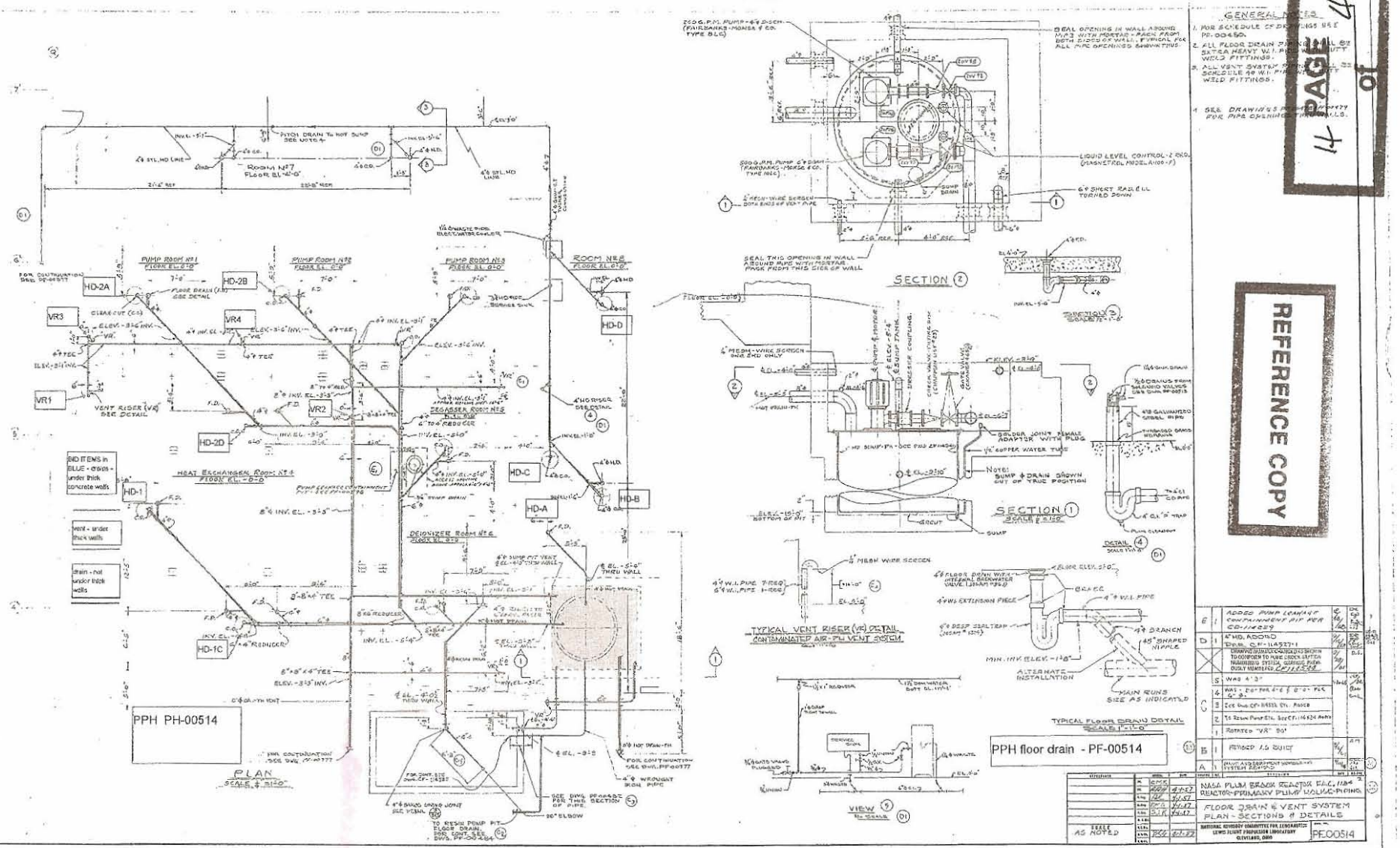
Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm^2
11	35	1	12	12	n/a	n/a
12	36		13	13		
13	37		13	13		
14	38		10	10		
15	39		7	7		
16	40		10	10		
17	41		2	2		
18	42		11	11		
19	43		15	15		
20	44		13	13		
21	45		12	12		
22	46		11	11		
23	47		14	14		
24	48		14	14		
25	49		7	7		
26	50		8	8		
27	51		12	12		
28	52		8	8		
29	53		10	10		
30	54		12	12		
31	55		8	8		
32	56		11	11		
33	57		8	8		
34	58		6	6		
35	59		9	9		
36	60		12	12		
37	61		10	10		
38	62		10	10		
39	63		16	16		
40	64		9	9		
41	65		13	13		
42	66		10	10		
43	67		19	19		
44	68		10	10		
45	69		9	9		

Pipe Interior Radiological Survey Form (Continuation Form)

Date: 6/15/06
Pipe ID#: PPH-105 Pipe Diameter: 8" Access Point Area: PPH-RA
Building: PPH Elevation: 0' System: AIR EXHAUST

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm^2
46	70	1	12	12	n/a	n/a
47	71	↓	18	18	↓	↓
48	72		11	11		
49	73		10	10		
50	74		14	14		
51	75		7	7		
52	~~25~~ 76		22	22		
53	77		17	17		
54	78		34	34		
55	79		30	30		
56	80		30	30		
57	81		24	24		
58	82		21	21		
59	83		31	31		
60	84	↓	32	32	↓	↓

n/a



- PIPE SURVEYED

PPH - 105

SECTION 7
ATTACHMENT 3
1 PAGE

DQA Check Sheet				
Design #	EP PPH-105	Revision #	Original	
Survey Unit #	EP PPH-105			

Preliminary Data Review`			
Answers to the following questions should be fully documented in the Survey Unit Release Record	Yes	No	N/A
1. Have surveys been performed in accordance with survey instructions in the Survey Design?	X		
2. Is the instrumentation MDC for structure static measurements below the $DCGL_W$ for Class 1 and 2 survey units, or below 0.5 $DCGL_W$ for Class 3 survey units?			X
3. Is the instrumentation MDC for embedded/buried piping static measurements below the $DCGL_W$?	X		
4. Was the instrumentation MDC for structure scan measurements, soil scan measurements, and embedded/buried piping scan measurements below the $DCGL_W$, or, if not, was the need for additional static measurements or soil samples addressed in the survey design?			X
5. Was the instrumentation MDC for volumetric measurements and smear analysis < 10% $DCGL_W$?			X
6. Were the MDCs and assumptions used to develop them appropriate for the instruments and techniques used to perform the survey?	X		
7. Were the survey methods used to collect data proper for the types of radiation involved and for the media being surveyed?	X		
8. Were "Special Methods" for data collection properly applied for the survey unit under review?	X		
9. Is the data set comprised of qualified measurement results collected in accordance with the survey design, which accurately reflects the radiological status of the facility?	X		
Graphical Data Review			
1. Has a posting plot been created?			X
2. Has a histogram (or other frequency plot) been created?			X
3. Have other graphical data tools been created to assist in analyzing the data?			X
Data Analysis			
1. Are all sample measurements below the $DCGL_W$ (Class 1 & 2), or 0.5 $DCGL_W$ (Class 3)?		X	
2. Is the mean of the sample data < $DCGL_W$?	X		
3. If elevated areas have been identified by scans and/or sampling, is the average activity in each elevated area < $DCGL_{EMC}$ (Class 1), < $DCGL_W$ (Class 2), or <0.5 $DCGL_W$ (Class 3)?	X		
4. Is the result of the Elevated Measurements Test < 1.0?	X		
5. Is the result of the statistical test (***S+*** for Sign Test or W_r for WRS Test) ≥ the critical value?			X

Comments:
See Section 5 of this Survey Unit Release Record

FSS/Characterization Engineer (print/sign)	G. Wood / G. Wood	Date	3/2/08
FSS/ Characterization Manager (print/sign)	R. Case	Date	3/6/08

Form
CS-09/2
Rev 0

SECTION 7
ATTACHMENT 4
1 DISC