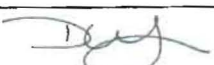
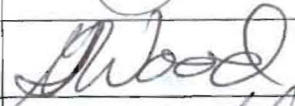



Survey Unit Release Record

Design #	EP-ED-1	Revision #	1	Page 1 of 43
Survey Unit #(s)	ED-1			
Description	<p>1) Embedded Pipe (EP) Survey Unit ED-1 was remediated and surveyed in December of 2007 as Embedded Pipe, at that time meeting the definition of embedded pipe as per the PBRF Final Status Survey Plan (FSSP). All measurement results were less than the Derived Concentration Guideline Level (DCGL) for radionuclide specific EP that corresponds to the 1 mrem/yr dose goal established in Table 3-3 of the FSSP. This survey was documented in Revision 0 of this Release Record.</p> <p>2) Since December of 2007, the envisioned end-state configuration of the Primary Pump House (PPH) was revised. Subsequently, the portions of Embedded Pipe (EP) Survey Unit ED-1 which transits in soil under and between the buildings no longer meets the criteria for embedded piping. The portions of Embedded Pipe (EP) Survey Unit ED-1 that are embedded in the building foundation walls (PPH and Hot Pipe Tunnel) remain classified as embedded pipe.</p> <p>3) This FSS survey documented in Revision 1 of this release record was performed after the performance of additional remediation to this system. Upon demonstration of compliance with the release criteria, the complete piping system will be grouted, including the portions embedded in the building structure that will remain embedded for any future reuse and those portions in the ground that can be released for unrestricted use.</p> <p>4) EP ED-1 is a Class 1, Group 1 survey unit as per the PBRF Final Status Survey Plan (FSSP) and Technical Basis Document (TBD)-06-004.</p> <p>5) Surveys in EP ED-1 were performed using a scintillation detector optimized to measure gamma energies representative of Co-60. Sample #EP 3-7 from Survey Request (SR)-13 was referenced for this decision.</p> <p>6) 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.</p> <p>7) 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.</p>			
Approval Signatures				Date:
FSS/Characterization Engineer	 D Wojtkowiak		04/08/08	
Technical Reviewer (FSS/Characterization Engineer)	 R. Case		4-16-08	
FSS/Characterization Manager	 R. Case		5/1/08	

Survey Unit: ED-1

1.0 History/Description

- 1.1 The subject pipe system is a 1.5" drain line section located in Room 8 of the Primary Pump House (PPH). The system is accessed from the 0' el.
- 1.2 EP ED-1 consists of 1.5" diameter piping that is approximately 10 feet in length.

2.0 Survey Design Information

- 2.1 EP ED-1 was surveyed IAW Procedure #BSI/LVS-002.
- 2.2 100% of the 1.5" ID pipe was accessible for survey. The accessible 1.5" ID pipe was surveyed by static measurement at one foot increments, for a total of 10 survey measurements.
- 2.3 Surface area for the 1.5" ID piping is 365 cm² for each foot of piping, corresponding to a total 1.5" ID piping surface area of 3,648 cm² (0.4 m²) for the entire length of (approximately 10') of 1.5" 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 (11,000 dpm/100cm²).
- 5.3 No individual measurement observed in EP ED-1 exceeded the Unity Rule as provided in Section 3.6.3 of the FSSP. No Elevated Measurement Comparisons (EMC) was required or performed. The survey unit that is constituted by EP ED-1 passes FSS. Mean unity for this survey unit was 0.376 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.
- 5.5 No area factors were used for this survey unit.
- 5.6 Background was not subtracted from the survey measurements.

Survey Unit: ED-1

5.7 Statistical Summary Table

Statistical Parameter	1.5" Pipe
Total Number of Survey Measurements	10
Number of Measurements >MDC	3
Number of Measurements Above 50% of DCGL	2
Number of Measurements Above DCGL	0
Mean	0.376
Median	0.294
Standard Deviation	0.255
Maximum	0.997
Minimum	0.136

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 ED-1 to be less than 25 mrem/yr. The dose contribution is estimated to be 9.40 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 – Disc containing RR for EP ED-1 & Spreadsheet

SECTION 7
ATTACHMENT 1
2 PAGES



BSI EP/BP SURVEY REPORT

Pipe ID	ED-1	Survey Location	PPH Rm 8' 0' ft. el.
Survey Date	25-Mar-08	2350-1 #	203438
Survey Time	15:20	Detector-Sled #	44-159 238367/no sled
Pipe Size	1.5"	Detector Efficiency	0.00055
DCGL (dpm/100cm ²)	1.10E+04	Pipe Area Incorporated by Detector Efficiency (in cm ²)	365
Pipe Area Incorporated by Survey Data (m ²)	0.4	Field BKG (cpm)	12
Routine Survey	X	Field MDCR (cpm)	7
QA Survey		Nominal MDC (dpm/100cm ²)	3,600

Survey Measurement Results

Total Number of Survey Measurements	10
Number of Measurements >MDC	3
Number of Measurements Above 50% DCGL	2
Number of Measurements Above DCGL	0
Mean	0.376
Median	0.294
Standard Deviation	0.255
Maximum	0.997
Minimum	0.136

Survey Technician(s)

Russell Phelps

Survey Unit Classification	1
TBD 06-004 Piping Group	1
SR-13 Radionuclide Distribution Sample	EP 3-7
Measured Nuclide	Co-60
Area Factor/EMC Used	No
Pass/Fail FSS	Pass
MREM/YR Contribution	<25

COMMENTS:

ACTIVITY VALUES NOT BACKGROUND CORRECTED

RP Engineer | Date

D. Wojtkowiak - 4/8/2008

EP ED-1 Revision 1
1.5" Pipe

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Unity
1	3	3	5,455	1,495	0.136
2	7	7	12,727	3,489	0.317
3	6	6	10,909	2,990	0.272
4	7	7	12,727	3,489	0.317
5	10	10	18,182	4,984	0.453
6	5	5	9,091	2,492	0.227
7	6	6	10,909	2,990	0.272
8	4	4	7,273	1,993	0.181
9	13	13	23,636	6,479	0.589
10	22	22	40,000	10,964	0.997
				MEAN	0.376
				MEDIAN	0.294
				STD DEV	0.255
				MAX	0.997
				MIN	0.136

SECTION 7
ATTACHMENT 2
2 PAGES

Pipe Interior Radiological Survey Form

Date: 3.25.08 Time: 1520
 Pipe ID#: ED-1 Pipe Diameter: 1.25" Access Point Area: PPH Rm 8
 Building: PPH Elevation: 0 System: FD
 Type of Survey Investigation Characterization Final Survey X Other
 Gross Co60 Cs
 Detector ID# / Sled ID# 238367-44-159 / no sled
 Detector Cal Date: 10-16-07 Detector Cal Due Date: 10-16-08
 Instrument: 2350-1 Instrument ID #: 203438
 Instrument Cal Date: 10-16-07 Instrument Cal Due Date: 10-16-08

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

Background Value 1.2 cpm
 MDCR_{static} 7 cpm
 Efficiency Factor for Pipe Diameter 0.00055 (from detector efficiency determination)
 MDC_{static} 3600 dpm / 100 cm²
 Is the MDC_{static} acceptable? Yes No (if no, adjust sample count time and recalculate MDCR_{static})
 Comments:

Technician Signature

Russell A. Phelps

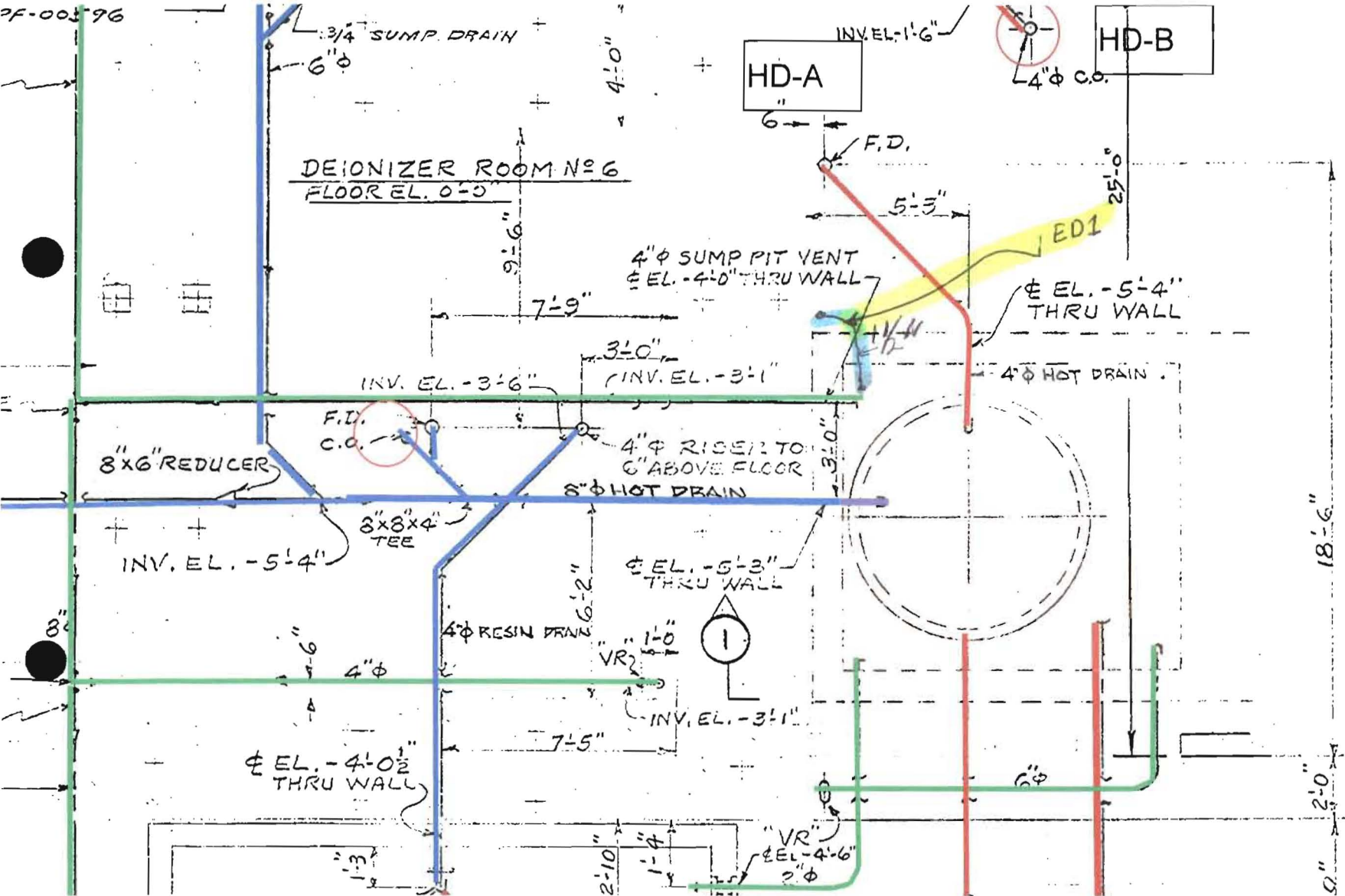
Pipe Interior Radiological Survey

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm ²
1	1		3	3		
2	2		7	7		
3	3		6	6		
4	4		7	7		
5	5		10	10		
6	6		5	5		
7	7		6	6		
8	8		4	4		
9	9		13	13		
10	10		22	22		

Package Page 1 of 2

REFERENCE COPY

PF-005196



REFERENCE COPY



4" W.I. PIPE
6" W.I. PIPE

PAGE
2 of 2

PF-00514

SECTION 7
ATTACHMENT 3
1 PAGE

DQA Check Sheet

Design #	EP ED-1	Revision #	1					
Survey Unit #	EP ED-1							
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:								
FSS/Characterization Engineer (print/sign)		D Wojtkowiak 				Date	04/08/08	
FSS/ Characterization Manager (print/sign)		R. Case 				Date	5/1/08	

SECTION 7
ATTACHMENT 4
1 DISC