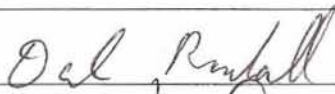
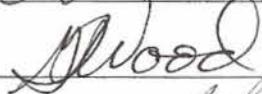
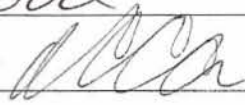


Survey Unit Release Record

Design #	EP-Rx 129	Revision #	Original	Page 1 of 3
Survey Unit #(s)	Rx 129			
Description	<p>1) Embedded Pipe (EP) Survey Unit Rx 129 meets the definition of embedded pipe for Plum Brook Reactor Facility (PBRF).</p> <p>2) EP Rx 129 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>3) Surveys in EP Rx 129 were performed using a scintillation detector optimized to measure gamma energies representative of Co-60. Sample #EP 3-8 from Survey Request (SR)-13 was referenced for this decision.</p> <p>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.</p> <p>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.</p>			
Approval Signatures			Date:	
FSS/Characterization Engineer			11-26-07	
Technical Reviewer (FSS/Characterization Engineer)			11-27-07	
FSS/Characterization Manager	R. Case			11/29/07

Form CS-09/1 Rev 0

Survey Unit: Rx 129

1.0 History/Description

- 1.1 The subject pipe system is a 4" drain line located in the Room 22 trench on the -27' el. of the Rx building.
- 1.2 EP Rx 129 consists of 4" diameter piping that is approximately 3 feet in length.

2.0 Survey Design Information

- 2.1 EP Rx 129 was surveyed IAW Procedure #BSI/LVS-002.
- 2.2 100% of the 4" ID pipe was accessible for survey. The accessible 4" ID pipe was surveyed by static measurement at one foot increments, for a total of 3 survey measurements.
- 2.3 The total surface area for the 4" ID piping is 2,919 cm² (0.3 m²) for the entire length of (approximately 3') of 4" 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 All measurement results are 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.
- 5.3 When implementing the Unity Rule, provided in Section 3.6.3 of the FSSP, and applying the Nuclide Fraction (NF), provided in TBD-06-004, the survey unit that is constituted by EP Rx 129 passes FSS.
- 5.4 Background was not subtracted from the survey measurements and the Elevated Measurement Comparison (EMC) was not employed for this survey unit.

Survey Unit: Rx 129

5.5 Statistical Summary Table

Statistical Parameter	4" Pipe
Total Number of Survey Measurements	3
Number of Measurements >MDC	3
Number of Measurements Above 50% of DCGL	0
Number of Measurements Above DCGL	0
Mean	0.0790
Median	0.0711
Standard Deviation	0.0240
Maximum	0.1059
Minimum	0.0599

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 Rx 129 to be less than 1 mrem/yr. The dose contribution is estimated to be 0.079 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

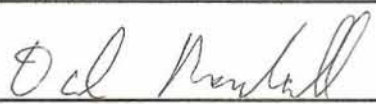
Attachment 3 – DQA Worksheet

Attachment 4 – Disc containing RR for EP Rx 129 & Spreadsheet

SECTION 7
ATTACHMENT 1
 2 **PAGE(S)**



BSI EP/BP SURVEY REPORT

Pipe ID	EP Rx 129	Survey Location	Rm. 22 Trench el.-27
Survey Date	08-Nov-07	2350-1 #	203488
Survey Time	13:56	Detector-Sled #	44-159 247697/101
Pipe Size	4"	Detector Efficiency	0.00044
DCGL (dpm/100cm ²)	2.41E+05	Pipe Area Incorporated by Detector Efficiency (in cm ²)	973
Pipe Area Incorporated by Survey Data (m ²)	0.3	Field BKG (cpm)	1.7
Routine Survey	X	Field MDCR (cpm)	7.5
QA Survey		Nominal MDC (dpm/100cm ²)	2,313
Survey Measurement Results			
Total Number of Survey Measurements		3	
Number of Measurements >MDC		3	
Number of Measurements Above 50% DCGL		0	
Number of Measurements Above DCGL		0	
Mean		0.0790	
Median		0.0711	
Standard Deviation		0.0240	
Maximum		0.1059	
Minimum		0.0599	
Survey Technician(s)	FOWLER		
Survey Unit Classification		1	
TBD 06-004 Piping Group		1	
SR-13 Radionuclide Distribution Sample		EP 3-8	
Measured Nuclide		Co-60	
Area Factor/EMC Used		No	
Pass/Fail FSS		Pass	
MREM/YR Contribution		<1	
COMMENTS: ACTIVITY VALUES NOT BACKGROUND CORRECTED			
RP Engineer Date	 11-26-07		

**EP Rx 129
4" Pipe
TBD 06-004 Group 1**

Measurement #	gcpm	ncpm	Co-60 activity (total dpm)	Co-60 activity (dpm/100cm2)	Cs-137 activity (dpm/100cm2)	Eu-152 activity (dpm/100cm2)	Eu-154 activity (dpm/100cm2)	Nb-94 activity (dpm/100cm2)	Ag-108m activity (dpm/100cm2)	Unity
1	51	51	115,909	11,914	472	11,302	3,004	348	83	0.071
2	43	43	97,727	10,045	398	9,529	2,533	293	70	0.060
3	76	76	172,727	17,754	704	16,842	4,477	518	124	0.106
									MEAN	0.079
									MEDIAN	0.071
									STD DEV	0.024
									MAX	0.106
									MIN	0.060

SECTION 7
ATTACHMENT 2
2 **PAGE(S)**

Pipe Interior Radiological Survey Form

Date: 11-8-07 Time: 1356
 Pipe ID#: R-129 Pipe Diameter: 4" Access Point Area: Pumpkin trench
 Building: R Bldg Elevation: -27' System: Drain
 Type of Survey Investigation _____ Characterization _____ Final Survey Other
 Gross _____ Co60 Cs _____
 Detector ID# / Sled ID# 44-159 / 247697 / 101
 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 1.7 cpm
 MDCR_{static} 7.5 cpm
 Efficiency Factor for Pipe Diameter 0.00044 (from detector efficiency determination)
 MDC_{static} 2313 dpm/ 100 cm²
 Is the MDC_{static} acceptable? Yes No (if no, adjust sample count time and recalculate MDC_{static})

Comments: Post Decon 100% Complete
Readings taken from trench to Slump

Technician Signature R Faul

Pipe Interior Radiological Survey

Position #	Feet into Pipe from Opening	Count Time (min)	Gross Counts	Gross cpm	Net cpm	dpm/100cm ²
1	1	1	51	51	n/a	n/a
2	2	↓	43	43	↓	↓
3	3	↓	76	76	↓	↓
4						
5						
6						
7						
8						
9						
10						

Package Page 1 of 2



SECTION 7
ATTACHMENT 3
 1 **PAGE(S)**

DQA Check Sheet

Design #	Rx 129	Revision #	Original	
Survey Unit #	Rx 129			

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 (<i>S</i> + for Sign Test or <i>W</i> _r for WRS Test) ≥ the critical value?			X

Comments:

FSS/Characterization Engineer (print/sign)	<i>Date Randall</i>	Date	11-26-07
FSS/ Characterization Manager (print/sign)	R. Case	Date	11/29/07

Form
CS-09/2
Rev 0

**SECTION 7
ATTACHMENT 4
1 DISC**