Survey Unit Release Record

Design #	19	Revision #	0	Page	1 of 4
Survey Unit #(s)	CV-3-2				

Description

1) Survey unit CV-3-2 is a Class 1 area located on the lowest level of the Containment Vessel and encompasses a portion of the walls of Area 29 and Area 30.

2) CV-3-2 is designated as a Class 1 Area in accordance with (IAW) the PBRF Final Status Survey Plan (FSSP).

3) All surveys were performed with a Ludlum 2350-1 and a Model 44-116 plastic scintillation detector.

4) All instruments used to perform these surveys were calibrated to detect surface beta activity IAW procedure CS-011, "Operation of the Ludlum Model 2350-1 Data Logger Survey Instrument." The gamma component was subtracted from the gross activity to calculate the actual surface beta activity at each survey (static measurement) location.

5) The Gross Beta $DCGL_w$ applied to this survey unit is derived from PBRF-TBD-07-001, and the efficiency correction factor (EFC) for concrete surfaces used in MDC calculations was derived from PBRF-TBD-07-004.

6) Scan surveys were performed on 100% of the accessible surface areas IAW the requirements of the FSSP and the Survey Design.

7) Documentation that the end radiological conditions of survey unit CV-3-2 meet the site release criteria is presented in this release record. Data supporting this decision was collected under Survey Request No. 97.

Approval Signatures		Date:
FSS/Characterization Engineer	Robby L. Marquette /	3/3/08
Technical Reviewer (FSS/Characterization Engineer)	R. Case	3/10/08
FSS/Characterization Manager	R. Case	3/10/08

Form CS-09/1 Rev. 0

1.0 Description of the Survey Unit

Survey Unit CV-3-2 is located on the lowest level of the Containment Vessel and consists of the Sub-pile Room walls and ceiling, the south hallway wall, the south and east stairwell headers, and the north and east elevator walls.

This survey unit was designated as a Class 1 area due to the contamination levels and its location directly below and adjacent to the reactor vessel. Activity above the $DCGL_W$ was present during and after plant operations.

The surface of interest consists of previously painted poured concrete which was sponge blasted to provide a smooth survey surface and to remove dirt and contamination. There is also some steel in the sup-pile room ceiling which was also sponge blasted for prep and decon purposes.

The total surface area for the survey unit has been calculated at 95.11 square meters.

2.0 Survey Unit Design Information

Survey Design No.19 covers survey unit CV-3-2. IAW PBRF-TBD-07-001, Table 5-3, the $DCGL_W$ value for this survey unit is 14,600 dpm/100 cm^2. Visual Sample Plan (VSP) version 5.0 was used to determine the number and locations of sample points within the survey unit. (See Design No.19, Section 2 for additional information)

The scan investigation level was set at 1,400 gross cpm for the 44-116 detector. The scan MDC was 7,025 dpm/100cm^2 based on a minimum net detectable count rate of 501.83. These are well below the $DCGL_w$ and appropriate for this survey unit.

The calculated Static Count MDC was 732 dpm/100cm^2 based on the material background count rate of 379.4 cpm which was established under MWH Characterization survey package G9000 401B1. This is well below the $DCGL_w$ and appropriate for this survey unit.

The following table summarizes the measurement design developed.

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Compare a site mean or median to a fixed threshold
Type of Sampling Design	Nonparametric
Sample Placement (Location) in the Field	Systematic with a random start location
Working (Null) Hypothesis	The median(mean) value at the site exceeds the threshold
Formula for calculating number of sampling locations	Sign Test - MARSSIM version
Calculated total number of samples	11
Number of samples on map [a]	11
Number of selected sample areas [b]	1
Specified sampling area [c]	95.11 m^2
Size of grid / Area of grid cell [d]	10.3665 feet / 93.0662 ft^2
Grid pattern	Triangular

[a] Size of grid / Area of grid cell gives the linear and square dimensions of the grid used to systematically place samples.

3.0 Survey Unit measurement locations and corresponding data.

See Attachment 1 for a map that shows measurement locations, a table that lists measurement location coordinates, and the corresponding data.

4.0 Survey Unit investigations performed and their results.

There were no investigations performed in this survey unit.

5.0 Data assessment results.

Data validation was accomplished by reviewing the acquired data for accuracy including instrument calibration and efficiency, comparing the data collection methodology and instrumentation prescribed in the Survey Request (SR) with the requirements of the design, and reviewing all surveys to ensure completeness and compliance with the SR. It has been determined that the final data presented from the performance of surveys is accurate, and is complete with regard to procedural compliance and that it meets the requirements of the Survey Design in order to satisfy the survey unit release criteria established by the FSSP. The following is a summation of the results from data collection activities and the data validation process.

The highest activity on the 11 static measurement locations was 1,715 dpm/100cm^2 at location SM-1. (See table below)

The following table identifies the systematic measurement locations, the results of those measurements in dpm/100 cm^2, and the unity for each measurement based on the stated DCGL$_W$ for the survey unit in dpm/100 cm^2.

Measurement Location	Measurement DPM/ 100 cm2	DCGL= **14,600** dpm 100cm2 % Unity
SM1	1,715	0.1175
SM2	1026	0.0703
SM3	874	0.0599
SM4	947	0.0649
SM5	775	0.0531
SM6	1007	0.0690
SM7	1159	0.0794
SM8	914	0.0626
SM9	954	0.0653
SM10	530	0.0363
SM11	556	0.0381
Mean	950.6	0.0651
Median	947.0	0.0649
St.Deviation	317.4	0.0217

Smears were taken at each of the static measurement locations. All smears were counted on the Tennelec with results below the MDA of 13.64 dpm for alpha and 19.85 dpm for beta. The stated MDA's are less than 10% of the DCGL$_w$ and therefore appropriate for this survey unit.

Scans were performed on 95.11 m^2 of the survey unit with the 44-116 detector, which represents 100% of the total surface area. No activity above the investigation level was identified on the surface scans performed.

The survey methods and instrumentation used to collect the data were appropriate for both the types of radiation involved and the media being surveyed. Additionally, MDC calculations for scan measurements were based on a movement rate 30 cm/sec. A more conservative rate of 15 cm/sec was employed through the Survey Request to facilitate the scanning technique and to maintain a consistent distance between the detector and the surface of interest.

Quality control measurements verified the original measurements as being accurate and Quality Inspections of the technicians performing the measurements indicate that the data was collected in accordance with the survey design. As a result, there is a high degree of confidence that the data collected accurately reflects the radiological status of this survey unit.

As identified above, all results were less than the $DCGL_w$ and therefore the survey unit meets the release criteria.

6.0 Evaluations pertaining to compliance with the unrestricted use limit of 25 mr/yr and dose contributions from embedded pipe and radionuclides contributing 10% in aggregate of the total dose.

Compliance with the unrestricted use limit of 25 mr/yr is demonstrated in the above Data Assessment since there is no dose contribution from embedded pipe in this survey unit and the radionuclides contributing 10% in aggregate of the total dose were taken into consideration in the establishment of the DCGL's within the technical basis document PBRF TBD-07-001.

DQA Check Sheet				
Design #	19	Revision #	0	Page 1 of 1
Survey Unit #	CV-3-2			

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) $\geq$ the critical value?			X

Comments:

FSS/Characterization Engineer (print/sign)	R. Marquette	Date	3/3/08
FSS/ Characterization Manager (print/sign)	R. Case	Date	3/10/08

Form
CS-09/2
Rev 0

Attachment 1

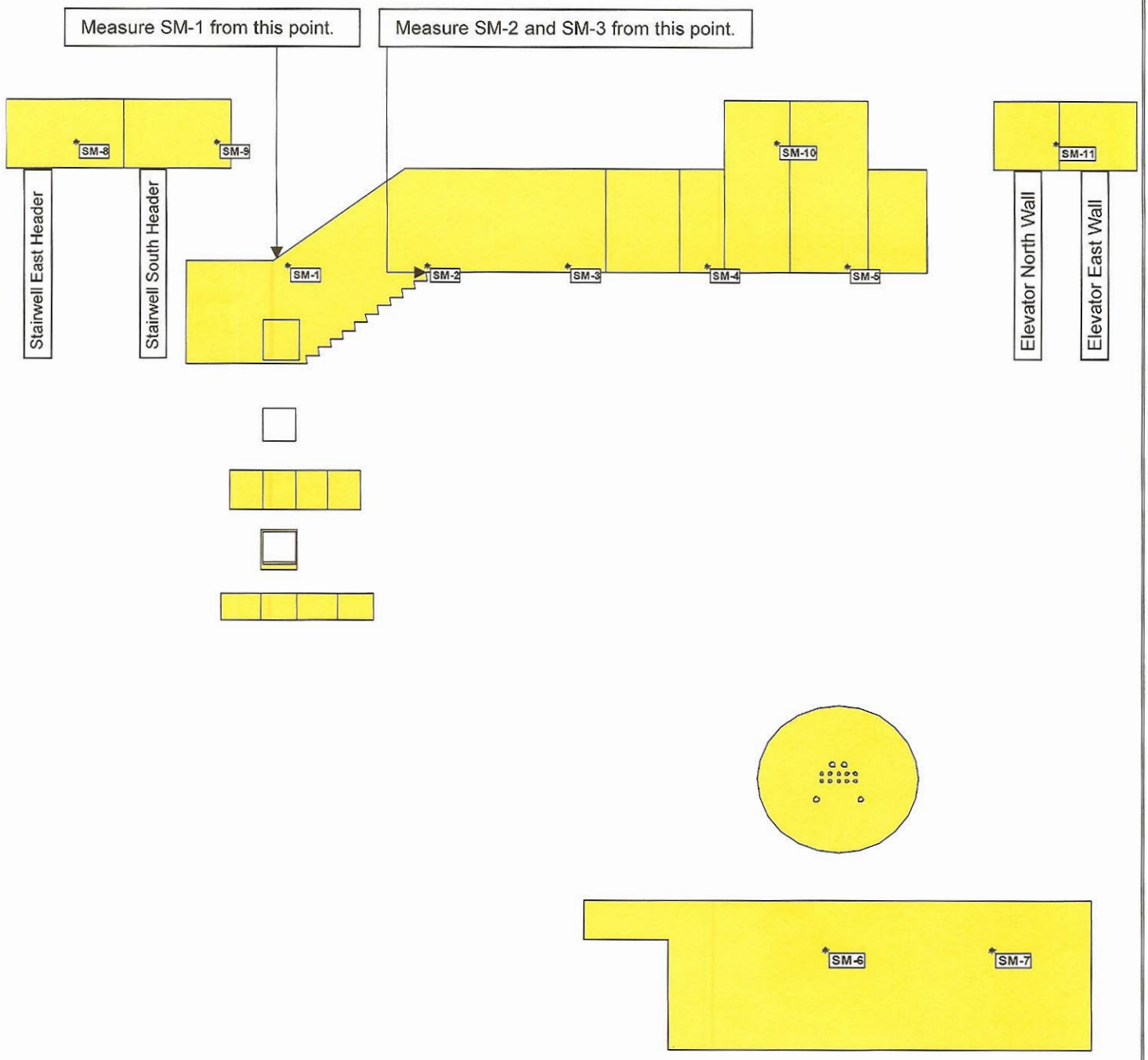
Survey Unit Release Record CV-3-2

The following chart identifies the X and Y coordinates for the measurement locations within the survey unit based on a computer generated random starting point. A CAD drawing of the different areas in the survey unit and a representation of the location of the measurements is provided on the following pages.

AREA: CV-3-2 Sub-pile Room walls / ceiling, south hallway wall, south and east stairwell headers, north and east elevator walls.

Measurement Locations and results

X Co-ord (m)	Y Co-ord (m)	Location / DPM/100cm2		Type	Notes
0.3	0.2	SM-1	708	Systematic	N/A
0.1	0.2	SM-2	1347	Systematic	N/A
3.2	0.2	SM-3	688	Systematic	N/A
0.6	0.2	SM-4	729	Systematic	N/A
1.3	0.2	SM-5	674	Systematic	N/A
3.0	2.1	SM-6	528	Systematic	N/A
6.1	2.1	SM-7	868	Systematic	N/A
1.6	0.6	SM-8	799	Systematic	N/A
2.1	0.6	SM-9	778	Systematic	N/A
1.2	2.9	SM-10	1403	Systematic	N/A
1.4	0.6	SM-11	958	Systematic	N/A

* Sample measurements are taken from the lower left-hand corner of the surface on which they rest, except for SM-1 through SM-3, which are measured from the location shown on the map.

Attachment 1
Survey Unit Release Record CV-3-2