Appendix A

Survey Design

ORIGINAL

FirstEnergy

SNEC CALCULATION COVER SHEET

CALCULATION DESCRIPTION

Calculation Number	Revision Number	Effective Date	Page Number
E900-05-015	0	5/10/05	1 of 11

Subject

OL1 Paved and Miscellaneous concrete surfaces MA8, PF1, DB5, DB1 - Survey Design

Question 1 - Is this calculation defined as "In QA Scope"? Refer to definition 3.5. Yes ☒ No ☐

Question 2 - Is this calculation defined as a "Design Calculation"? Refer to definitions 3.2 and 3.3. Yes ☒ No ☐

NOTES: If a "Yes" answer is obtained for Question 1, the calculation must meet the requirements of the SNEC Facility Decommissioning Quality Assurance Plan. If a "Yes" answer is obtained for Question 2, the Calculation Originator's immediate supervisor should not review the calculation as the Technical Reviewer.

DESCRIPTION OF REVISION

APPROVAL SIGNATURES

Calculation Originator	W. J. Cooper CHP/	Date	4/27/05
Technical Reviewer	R. Holmes/	Date	5/4/05
Additional Review	A. Paynter/	Date	4 May 2005
Additional Review		Date	

1.0 PURPOSE

1.1 The purpose of this calculation is to develop a survey design for the residual concrete surfaces in the Saxton Nuclear Experimental Corporation SNEC and SSGS site areas. The total area (OL1) including the soil and solid surface portions is approximately ***11600 square meters*** . Portions of the solid surface (concrete, macadam, brick) are Class1 and Class 2 survey areas. Because the survey area exceeds the size limitations in the SNEC LTP (**Reference 3.5**) Table 5-5 for maximum class 1 survey unit area, this survey area is subdivided into multiple survey units: OL1-7 is an existing excavation in the SNEC site area, that will be backfilled after survey. OL1-8 through OL1-13 are subdivisions of the large open land area and comprise the majority of the total surface area. These open land areas and the excavation are covered by other design calculations. Several additional areas comprise the residual exposed concrete and macadam surfaces:

1.1.1 PF1 is a pre-existing Class 1 survey unit for the PAF floor and includes the north edge of the PF1 portion of the slab- **37 m^2**

1.1.2 DB1 is a pre-existing Class 1 survey area for the DSB floorpad and door ramp. This area is further divided into two survey units due to LTP survey unit area limitations. DB1-1(85 m^2) and DB1-2 (109 m^2) – **194 m^2** total. DB1-1 includes the full width of the north edge of the DSB portion of the pad.

1.1.3 DB5 is a pre-existing Class 1 survey unit for the DSB carport floor - **54 m^2**

1.1.4 SS12 is a pre-existing survey area for the SSGS boiler pad. This concrete, although it is in a Class 1 soil area, is classified as Class 3 in the LTP Table 5-2. This area is not included in this design, but will be covered in a separate design due to the current presence of a large 'PRI pile' in the survey unit.

1.1.5 MA8-6 through 13, 16, and 17: Ten survey units of the old parking lot and driveway macadam. Because of the 100 m^2 survey unit limitation for class 1 surfaces, the surface was subdivided into ten approximately 100 m^2 (or less) survey units. The pavement occupies all of, or a large portion of, grids AT131, AU127, AU128, AU129, AU130, AU131, AV130, AV131, AW131, AX131, AY131. These are all class 1 survey units due to verbal reports of minor remediation and due to their proximity to the C&A building, the barrel bunker, and containment. Total area is about **772 m^2**. General arrangement of these units is shown in the drawing **Attachment 6-17**.

1.1.6 MA8-16 and MA8-17 have about 4 to 6 inches of soil on top of the pavement. This soil is to be surveyed per E900-05-014 and then removed and placed in a PRI pile to allow the pavement survey per this design.

1.1.7 MA8-14 – the Line Shack concrete including garage door ramps and sidewalks. This area is not specifically classified in the SNEC LTP (**Reference 3.5**) but is selected to be class 2 consistent with the class 3 classification of the line shack exterior and the class 1 assigned to the surrounding soil. This is a Class 2 survey unit with about **33 m^2** total area.

1.1.8 MA8-15 is additional concrete surfaces around the CV. There is some SSGS concrete and additional small monoliths in OL1-9 NW of the CV. This small concrete area is not specifically addressed in the SNEC LTP but is assumed to be Class 1 due to proximity to the CV and is about **37 m^2**.

1.1.9 A summary list of survey unit areas is included as **Attachment 5-1**.

1.2 This survey design applies only to the residual concrete, macadam, and other paved surfaces in the survey area. The design for the open land areas, fences, the east yard excavation, and the portion of OL1 covering the SSGS will be provided in separate calculations. The general layout of this survey unit is shown on **Attachment 1-1**.

2.0 SUMMARY OF RESULTS

The following information should be used to develop a survey request for this survey unit. The effective DCGLw value is listed below. This value is derived from previously approved derived values for "CV Yard Soil and Boulders", Attachment 2 in SNEC calculation E900-04-005 (**Reference 3.15**). The US NRC has reviewed and concurred with the methodology used to derive these values. See **Attachment 2-1** and **Reference 3.9**.

Table 1, DCGLw Values

Gross Activity DCGLw (dpm/100 cm^2)
26445 (19834 A.L.)

NOTE: A.L. is the site Administrative Limit (75% of effective DCGLw)

2.1 Survey Design

2.1.1 Scanning of concrete and macadam surfaces shall be performed using a ***L2350 with 43-68B large area gas flow proportional counter*** calibrated to Cs-137 (see typical calibration information on **Attachment 3-1**).

2.1.2 The instrument conversion factor/efficiency (Et) shall not be less than that assumed on **Attachment 3-1** as ***23.9% – Cs-137***.

2.1.3 Other instruments of the type specified in Section 2.1.1 above may be used during the final status survey (FSS), but must demonstrate detection efficiencies at or above the value listed in Section 2.1.2 above.

2.1.4 An efficiency correction factor (ECF) is applied to compensate for efficiency loss when surveying rough surfaces based on **Reference 3.1** and **Attachment 2-2.**

2.1.5 The fraction of detectable beta emitting activity affects the efficiency and is determined by the nuclide mix. The mix detectable beta fraction is determined to be 60% based on **Reference 3.15**. Because the adjusted DCGLw used is based only on the modified Cs-137 DCGLw, the mix percentage is not applied to the adjusted surrogate DCGLw. The gross activity DCGLw, which would include all the low energy activity and would require mix percentage adjustment is considerable higher, at 44434 dpm 100cm2. The Cs-137 adjusted surrogate activity already accounts for the detectable beta yield of the mix.

2.1.6 The ECF is derived from **Attachment 2-2** and **Reference 3.10** based on a surface irregularity of 3 inches or less. This is conservative, as actual observed irregularity is typically less than one inch. Also, the loss of efficiency is based on moving the detector away from a 150 cm^2 source. If the area of the residual activity is larger, than the efficiency loss would be smaller due to the increase in 'field-of-view' of the detector.

2.1.7 Because the alarm point and MDCscan are based on the highly conservative surface irregularity of 3 inches (intended to bound all cases to simplify design and performance of the survey), where surfaces are much smoother (e.g. 1 inch irregularity or less per probe area) than this 3 inch variability, short (e.g. ½ to 1 inch) standoff support pegs may be attached to the 43-68 in order to reduce the possibility of mylar damage. These standoffs must only be used when the surface smoothness is well within the assumed 3 inch variability. Because the high surface irregularity is assumed and used for the efficiency of the instrument for the entire design, this standoff will not affect the assumed efficiency if limited as discussed above.

Table 2, GFPC Detection Efficiency Results Used for Planning

Material Type	EI	Es	Et(as %)	ECF	Adjusted efficiency
Concrete	.478	.5	23.9	.2	4.8%

Table 3, Surface Scanning Parameters for Solid Misc. Concrete Sections

MDCscan (dpm/100cm^2)*	Scan Speed (cm/sec)	Maximum Distance from Surface	DCGLw Action Level	% Coverage
4634	10	1" (gap between detector face & surface)	> 1450 cpm	100%

See Attachment 2-1, 2-2, and 4-1 for calculations*

2.1.8 This MDCscan (shown in **Attachment 4-1**) is based on a 300 cpm background. Typical backgrounds are similar to this value assumed, as shown in the variability data shown as "CW" (closed window or shielded detector) in **Attachment 8-2**. Unaffected material backgrounds were determined at the Williamsburg station, which resulted in a mean background value of 306 cpm +/- 34.5. On 3/7/05, measurements were collected on three different surfaces in OL1: the DSB pad, the old parking lot, and the SSGS boiler pad.

2.1.9 The 3/7/05 survey data shown as "OW" (open window or unshielded) is used for the variability assessment for the COMPASS determination of sample requirements and is shown in **Attachment 8-2**.

2.1.10 A background of 1300 cpm would still result in MDCscan less than about 50% of the DCGLw (**Attachment 4-2**). Since the Action level cited in Table 3, above, is total counts per minute including background, if local backgrounds significantly exceed the background count rate assumed for the MDCscan (about 300cpm see **Attachment 4-1**) ***contact the cognizant SR coordinator*** to determine need for additional background count rate adjustments.

2.1.11 The scan DCGLw Action Level listed in Table 3 includes 1200 cpm DCGL equivalent count rate from **Attachment 4-1** and an estimated 250 cpm background . The DCGLw action level is based on fixed measurement and does not include 'human performance factors' or 'index of sensitivity' factors (see **Reference 3.12**).

2.1.12 If a total count rate greater than the "DCGLw action level" of Table 3 is encountered during the scanning process, the surveyor should stop and locate the boundary of the elevated area, and then perform a "second phase" fixed point count of at least 30 seconds duration. If the second phase result equals or exceeds the "DCGLw action" level noted in table 3, the surveyor should then mark the elevated area with appropriate marking methods and document the count rate observed and an estimate of the affected area. Subsequent investigation may take the actual surface irregularity into account for the efficiency.

2.1.12.1 ***Class 1*** concrete should be scanned to include 100% surface coverage at a scan rate of about 10 cm per second. All accessible surfaces are required to be scanned. See **Attachment 1-1** for grid layout for the survey unit. Areas that cannot be accessed should be clearly noted along with the reason for not completing the scan in that area.

2.1.12.2 ***Class 2*** concrete would normally be scanned to include 10% to 50% surface coverage. Only the concrete around the line shack is class 2. Due to the small size of the unit and the distribution of small areas, **the unit (MA8-14) will be 100% scanned** at a scan rate of about 10 cm per second. Areas that cannot be accessed should be clearly noted along with the reason for not completing the scan in that area.

2.1.12.3 See **Attachment 1-1** for grid layout for the survey unit.

2.1.12.4 The surfaces of the concrete or other pavement materials should be clear of debris to ensure detection parameters are not affected.

2.1.13 The minimum number of fixed measurement sampling points indicated by the COMPASS computer program (**Reference 3.3**) is ***11*** for each survey unit (see COMPASS output on **Attachment 7-1** to **7-5**). Fixed point measurements should be IAW Section 2.2. The MDCscan (concrete) is below the effective administrative $DCGLw_{Cs-137}$ (4634 DPM/100cm2 MDCscan @300cpm bkg < 19834 DPM/100cm2 AL).

2.1.14 The minimum number of fixed point samples is increased to 13 (18% increase) for survey unit DB1-2 due to the slightly oversized (109 m^2, 9% over LTP guideline) area of the unit. This oversize is due to the selection of a grid line as the separation point between DB1-1 and DB1-2. Survey Unit DB1-1 is only 85 m^2. Since both units are class 1, the DSB pad will be 100% scanned regardless of the survey unit separation. Relocation of the arbitrary separation line could make these both equal and <100m^2 but is not considered to be useful since: separation on a grid line simplifies survey layout, the two units combined are <200 m^2, and the two units combined have more than the required number of fixed points (26 total vs. 22 required per MARSSIM).

2.1.15 One Biased direct measurement point is placed in DB1-1 on the face of the exposed slab. This point should be taken centered vertically on the vertical face at the 128 grid line.

2.1.16 VSP (**Reference 3.4**) is used to plot all sampling points on the included diagrams. The actual number of random start systematically spaced measurement points may be greater than that required by the COMPASS computer code because of any or all of the following:

- placement of the initial random starting point (edge effects),
- odd shaped diagrams, and/or
- coverage concerns

(see **Attachment 6-1** to **6-33** for VSP sampling point locations)

2.1.17 Because this design is a conglomerate of multiple slab surfaces into multiple survey units, the sample point locations are not derived from a single starting point. Measurement location details for the sample points are provided in the diagrams in **Attachment 6.**

2.1.18 Some sampling points may need to be adjusted to accommodate obstructions within the survey area. Contact the SR coordinator to report any difficulties encountered when laying out systematic grid sampling points.

2.1.19 Because of the unusual arrangement of this survey area, with multiple disjointed slabs that do not correspond directly to single grids, the drawings in **Attachment 6** are intended to be as close as practicable to as-left conditions. However, if actual layout is different from that shown, review with the cognizant SR coordinator, finish the survey if practicable, and mark up the drawings to indicate actual layout.

2.1.20 When an obstruction is encountered that will not allow collection of a sample, ***contact the cognizant SR coordinator*** for permission to delete the sampling point.

NOTE
If remediation actions are taken as a result of this survey, this survey design must be revised or re-written entirely.

2.2 Measure concrete fixed point and elevated areas(s) IAW SNEC procedure E900-IMP-4520.04 sec 4.3.3 (**Reference 3.2**) and the following.

2.2.1 Clearly mark, identify and document all sample locations.

2.3.1 Second phase scan any location that is above the action level cited in Table 3.

2.3.2 Investigation of APs may require surface and sub-surface samples per the LTP section 5.5.3.4.5 (**Reference 3.5**).

3.0 REFERENCES

3.1 SNEC Calculation number 6900-02-028, "GFPC Instrument Efficiency Loss Study"

3.2 SNEC Procedure E900-IMP-4520.04, "Survey Methodology to Support SNEC License Termination".

3.3 COMPASS Computer Program, Version 1.0.0, Oak Ridge Institute for Science and Education.

3.4 Visual Sample Plan, Version 3.0, Copyright 2004, Battelle Memorial Institute.

3.5 SNEC Facility License Termination Plan.

3.6 SNEC Procedure E900-IMP-4500.59, "Final Site Survey Planning and DQA".

3.7 SNEC survey GFPC measurements in OL1 dated 3/7/05

3.8 GPU Nuclear, SNEC Facility, "Site Area Grid Map", SNECRM-020, Sheet 1, Rev 4, 1/18/05.

3.9 SNEC Calculation No. E900-03-012, Effective DCGL Worksheet Verification.

3.10 SNEC calculation 6900–02-028 "GFPC Instrument Efficiency Loss Study"

3.11 SNEC Procedure E900-IMP-4520.06, "Survey Unit Inspection in Support of FSS Design".

3.12 NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual", August, 2000.

3.13 Microsoft Excel 97, Microsoft Corporation Inc., SR-1 and SR-2, 1985-1997.

3.14 (left intentionally blank)

3.15 SNEC Calculation E900-04-005 "CV Yard Survey Design – North West Side of CV"

4.0 ASSUMPTIONS AND BASIC DATA

4.1 The COMPASS computer program is used to calculate the required number of random start systematic samples to be taken in the survey unit (**Reference 3.3**).

4.2 Reference background data from offsite at the Williamsburg station were used as the initial estimate of variability. These results are shown on **Attachment 8-1** and in **Reference 3.15**. Additional variance data that is used to assess sampling requirements is derived from the survey, **Reference 3.7**.

4.3 The MARSSIM Sign Test (**Reference 3.12**) will be applicable for this survey design. No background subtraction will be performed under this criteria during the DQA phase.

4.4 The required points chosen by COMPASS are located on the survey map for the survey unit by the Visual Sample Plan (VSP) computer code (**Reference 3.4**).

4.5 **Reference 3.5** and **3.6** were used as guidance during the survey design development phase.

4.6 Background for the 43-68B detector has been measured in the area, and ranges from about 250 to 300 cpm with averages of slightly less than 300 cpm (**Reference 3.7**). These recent survey result averages are used as the basis for the MDCscan.

4.7 The determination of the physical extent of this area is based on the drawing **Reference 3.8** and a thorough walkdown / measurement of the survey unit.

4.8 Remediation History:

4.8.1 OL1 is an open land area. Portions contained the original SNEC site facility and the Saxton Steam Generating Station. Extensive remediation has occurred in the survey area. The SNEC Radwaste building (RWDF), Control and Auxiliary (C&A) building, Containment Vessel (CV), the SSGS, various buried pipe tunnels and underground tanks were all removed to grade or below. The residual portions of the buildings have been previously surveyed and the release surveys have been accepted.

4.8.2 The SSGS was backfilled when it was permanently shut down. Subsequently, residual licensed activity was found using core bores. The SSGS backfill was removed and surveyed through an automated conveyor system. Additional concrete surfaces in the SSGS basement were remediated and then the scanned backfill was replaced following survey.

4.8.3 The underground tank excavation was backfilled after the tanks were removed early in the project. This backfill was removed and scanned using a automated conveyor scanning system and is currently stored for re-use.

4.8.4 The barrel bunker was removed as part of the remediation process.

4.8.5 Underground drainage, sewerage systems and surface soils have been removed.

4.8.6 Some pavement was remediated during the building removal phase.

4.9 This survey design uses Cs-137 as a surrogate for all SNEC facility related radionuclides in the survey unit. The effective DCGLw is the Cs-137 DCGLw from the SNEC LTP (28000 dpm/100cm^2) adjusted (lowered) to compensate for the presence (or potential presence) of other SNEC related radionuclides (**Reference 3.9**). In addition, an administrative limit (75%) has been set that further lowers the permissible Cs-137 concentration to an effective surrogate DCGLw for this survey area.

The sample database used to determine the effective radionuclide mix for the OL1 area has been drawn from samples that were assayed at off-site laboratories. This nuclide mix is copied from **Reference 3.15**.

The GFPC detector scan MDC calculation is determined based on a 10 cm/sec scan rate, a 1.38 index of sensitivity (95% correct detection probability and 60% false positive) and a detector sensitivity (Et) of 23.9% cpm/dpm for Cs-137. The expected range of background values varies from about 250 cpm to about 300 cpm.

4.10 The survey unit described in this survey design was inspected after remediation efforts were shown effective. A copy of the specific portion of the SNEC facility post-remediation inspection report (**Reference 3.11**) applicable to this design is included as **Attachment 9-1**.

4.11 No special area characteristics including any additional residual radioactivity (not previously noted during characterization) have been identified in this survey area.

4.12 The decision error for this survey design is 0.05 for the α value and 0.1 for the β value.

4.13 "Special measurements" (as described in the SNEC LTP, **Reference 3.5**) are included in this survey design. Section 5.5.3.4.5 discusses pavement surveys. This survey design is consistent with the LTP.

4.14 No additional sampling will be performed IAW this survey design beyond that described herein.

4.15 SNEC site radionuclides and their individual DCGLw values are listed on **Exhibit 1** of this calculation based on Table 5-1 in **Reference 3.5**.

4.16 The survey design checklist is listed in **Exhibit 2**.

4.17 Area factors are shown as part of COMPASS output (see **Attachment 7-1**) and are based on the Cs-137 area factors from the SNEC LTP.

5.0 CALCULATIONS

5.1 All calculations are performed internal to applicable computer codes or within an Excel (**Reference 3.13**) spreadsheet.

6.0 APPENDICES

6.1 **Attachment 1-1** is the general layout diagram of the survey units.

6.2 **Attachment 2-1** and **2-2** are the DCGLw calculation logic for the survey unit from **Reference 3.15** and the estimate of effect on efficiency of the irregular surface.

6.3 **Attachment 3-1**, is a copy of the calibration data from typical GFPC radiation detection instrumentation that will be used in this survey area.

6.4 **Attachment 4-1**, is the MDCscan calculation sheet for concrete (and macadam) surfaces in dpm/100cm^2. **Attachment 4-2** shows the effect of elevated background on MDCscan.

6.5 **Attachment 5-1**, is a summary list of survey units included in this design, with the estimated area of each.

6.6 **Attachment 6-1** through **6-33**, show the randomly picked scan locations (from VSP) and reference coordinates for the survey unit areas.

6.7 **Attachment 7-1** through **7-5**, are COMPASS output for the survey unit showing the number of sampling points in the survey unit, area factors, and prospective power.

6.8 **Attachment 8-1**, is the surface variability results for concrete surface measurements from the Williamsburg station (**Reference 3.15**). **Attachment 8-2** is the summary of backgrounds and surface measurements taken in the survey unit. **Attachments 8-3** through **8-6** are copies of the survey used for variability.

6.9 **Attachment 9-1**, is the results of the inspection report for the residual surface portion of the OL1 area. Attachments 9-2 through 9-5 show the Surface Measurement Test Area data.

5/14/05

Exhibit 1

SNEC Facility Individual Radionuclide DCGL Values [a]

Radionuclide	25 mrem/y Limit Surface Area ($dpm/100cm^2$)	25 mrem/y Limit (All Pathways) Open Land Areas (Surface & Subsurface) (pCi/g)	4 mrem/y Goal (Drinking Water) Open Land Areas [b] (Surface & Subsurface) (pCi/g)
Am-241	2.7E+01	9.9	2.3
C-14	3.7E+06	2	5.4
Co-60	7.1E+03	3.5	67
Cs-137	2.8E+04	6.6	397
Eu-152	1.3E+04	10.1	1440
H-3	1.2E+08	132	31.1
Ni-63	1.8E+06	747	1.9E+04
Pu-238	3.0E+01	1.8	0.41
Pu-239	2.8E+01	1.6	0.37
Pu-241	8.8E+02	86	19.8
Sr-90	8.7E+03	1.2	0.61

NOTES:

(a) While drinking water DCGLs will be used by SNEC to meet the drinking water 4 mrem/y goal, only the DCGL values that constitute the 25 mrem/y regulatory limit will be controlled under this LTP and the NRC's approving license amendment.

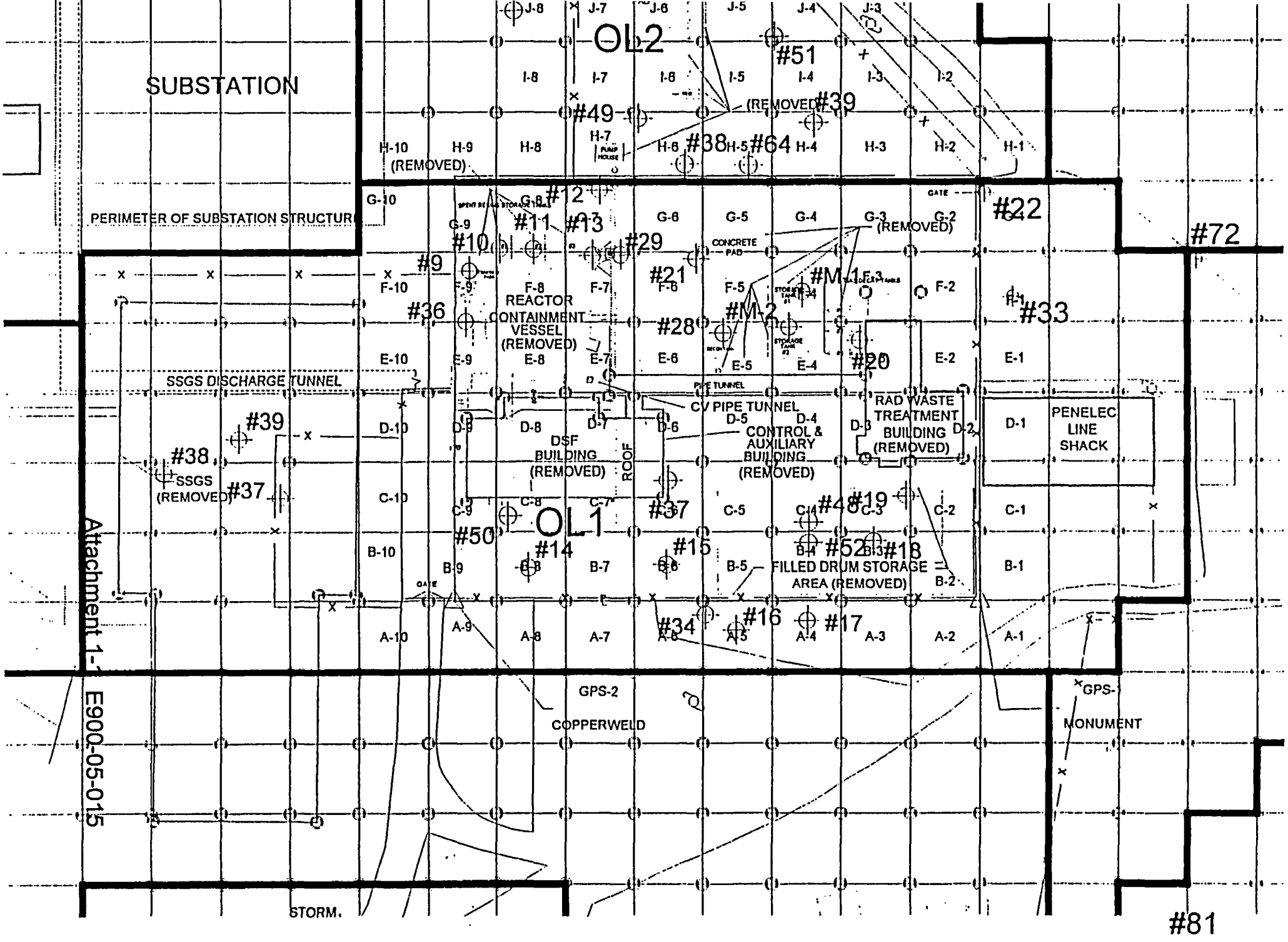
(b) Listed values are from the subsurface model. These values are the most conservative values between the two models (i.e., surface & subsurface).

Exhibit 2

Survey Design Checklist

Calculation No. E900-05-015	Location Codes SNEC plant areas : OL1 Paved and Miscellaneous concrete surfaces MA8, PF1, DB5, DB1		
ITEM	**REVIEW FOCUS**	**Status (Circle One)**	**Reviewer Initials & Date**
1	Has a survey design calculation number been assigned and is a survey design summary description provided?	(Yes,) N/A	5/4/05
2	Are drawings/diagrams adequate for the subject area (drawings should have compass headings)?	(Yes) N/A	5/4/05
3	Are boundaries properly identified and is the survey area classification clearly indicated?	(Yes,) N/A	5/4/05
4	Has the survey area(s) been properly divided into survey units IAW EXHIBIT 10	(Yes) N/A	5/4/05
5	Are physical characteristics of the area/location or system documented?	(Yes) N/A	5/4/05
6	Is a remediation effectiveness discussion included?	(Yes) N/A	5/4/05
7	Have characterization survey and/or sampling results been converted to units that are comparable to applicable DCGL values?	(Yes,) N/A	5/4/05
8	Is survey and/or sampling data that was used for determining survey unit variance included?	(Yes) N/A	5/4/05
9	Is a description of the background reference areas (or materials) and their survey and/or sampling results included along with a justification for their selection?	Yes (N/A)	5/4/05
10	Are applicable survey and/or sampling data that was used to determine variability included?	(Yes,) N/A	5/4/05
11	Will the condition of the survey area have an impact on the survey design, and has the probable impact been considered in the design?	Yes, (N/A)	5/4/05
12	Has any special area characteristic including any additional residual radioactivity (not previously noted during characterization) been identified along with its impact on survey design?	Yes (N/A)	5/4/05
13	Are all necessary supporting calculations and/or site procedures referenced or included?	(Yes,) N/A	5/4/05
14	Has an effective DCGLw been identified for the survey unit(s)?	(Yes,) N/A	5/4/05
15	Was the appropriate $DCGL_{EMC}$ included in the survey design calculation?	Yes, (N/A)	5/4/05
16	Has the statistical tests that will be used to evaluate the data been identified?	(Yes,) N/A	5/4/05
17	Has an elevated measurement comparison been performed (Class 1 Area)?	Yes, (N/A)	5/4/05
18	Has the decision error levels been identified and are the necessary justifications provided?	(Yes,) N/A	5/4/05
19	Has scan instrumentation been identified along with the assigned scanning methodology?	(Yes) N/A	5/4/05
20	Has the scan rate been identified, and is the MDCscan adequate for the survey design?	(Yes,) N/A	5/4/05
21	Are special measurements e.g., in-situ gamma-ray spectroscopy required under this design, and is the survey methodology, and evaluation methods described?	Yes, (N/A)	5/4/05
22	Is survey instrumentation calibration data included and are detection sensitivities adequate?	(Yes,) N/A	5/4/05
23	Have the assigned sample and/or measurement locations been clearly identified on a diagram or CAD drawing of the survey area(s) along with their coordinates?	(Yes,) N/A	5/4/05
24	Are investigation levels and administrative limits adequate, and are any associated actions clearly indicated?	(Yes,) N/A	5/4/05
25	For sample analysis, have the required MDA values been determined.?	Yes, (N/A)	5/4/05
26	Has any special sampling methodology been identified other than provided in Reference 6.3?	Yes, (N/A)	5/4/05

NOTE: a copy of this completed form or equivalent, shall be included within the survey design calculation.


SUBSTATION
PERIMETER OF SUBSTATION STRUCTUR
OL2
OL1
#51
#49
#39
#38
#64
#12
#11
#13
#10
#29
#9
#21
#M1
#M2
#36
#28
#20
#22
#72
#33
REACTOR CONTAINMENT VESSEL (REMOVED)
CONCRETE PAD
SSGS DISCHARGE TUNNEL
PIPE TUNNEL
CV PIPE TUNNEL
RAD WASTE TREATMENT BUILDING (REMOVED)
PENELEC LINE SHACK
DSF BUILDING (REMOVED)
ROOF
CONTROL & AUXILIARY BUILDING (REMOVED)
SSGS (REMOVED)
#37
#48
#19
#50
#14
#15
#52
#18
FILLED DRUM STORAGE AREA (REMOVED)
#34
#16
#17
GPS-2
COPPERWELD
GPS-
MONUMENT
Attachment 1-1
E900-05-015
STORM.
#81

Effective DCGL Calculator for Cs-137 (dpm/100 cm^2)

Gross Activity DCGLw		Gross Activity Administrative Limit	
44434	dpm/100 cm^2	33325	dpm/100 cm^2

25.0 mrem/y TEDE Limit

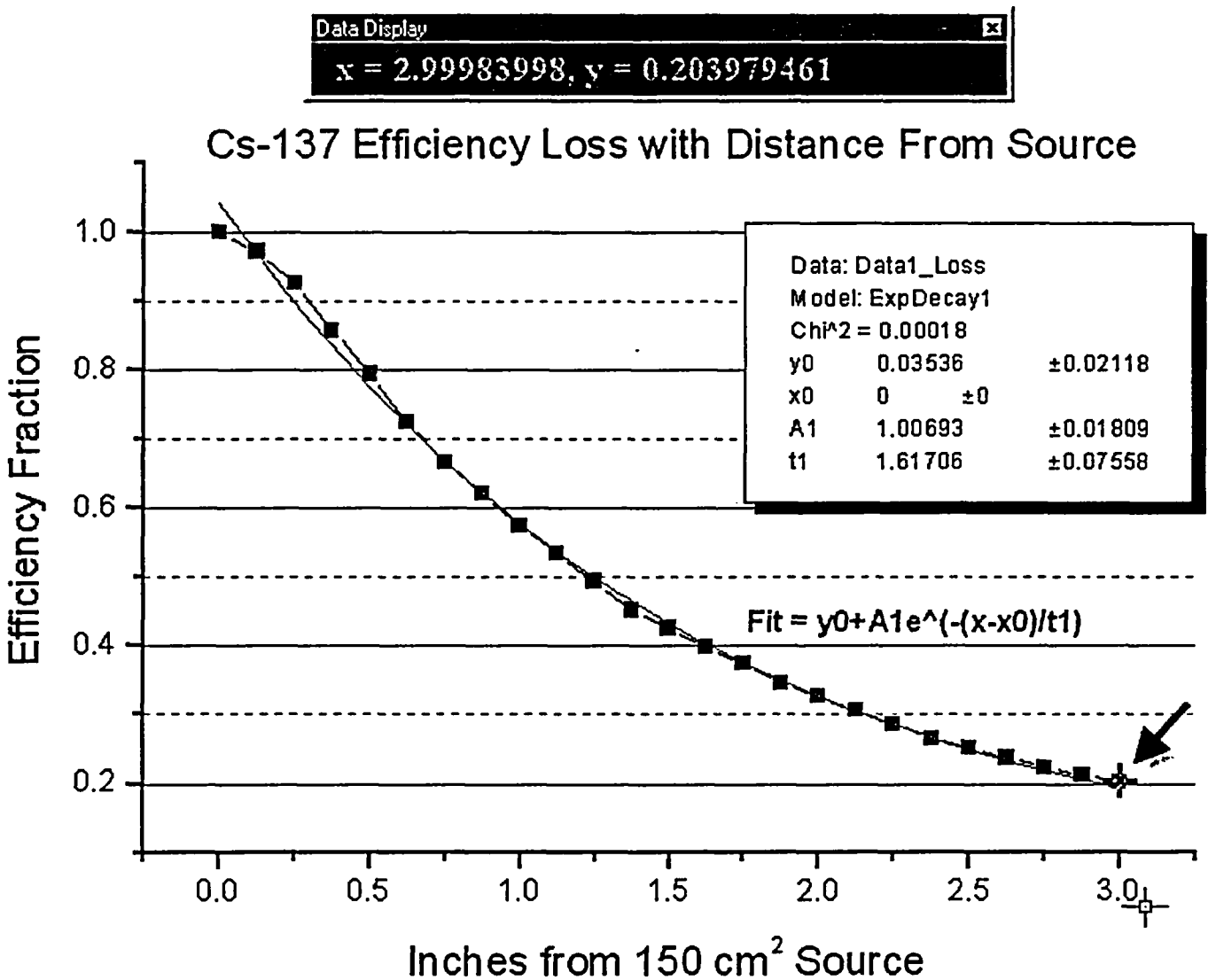
SAMPLE NO(s)⇒ CV YARD SOIL & BOULDER SAMPLES

Cs-137 Limit		Cs-137 Administrative Limit	
26445	dpm/100 cm^2	19834	dpm/100 cm^2

SNEC AL	75%

	Isotope	Sample Input (pCi/g, uCi, etc.)	% of Total	Individual Limits (dpm/100 cm^2)	Allowed dpm/100 cm^2	mrem/y TEDE	Beta dpm/100 cm^2	Alpha dpm/100 cm^2	
1	Am-241		0.000%	27	0.00	0.00	N/A	0.00	Am-241
2	C-14		0.000%	3,700,000	0.00	0.00	0.00	N/A	C-14
3	Co-60	6.25E-03	0.443%	7,100	196.87	0.69	196.87	N/A	Co-60
4	Cs-137	8.40E-01	59.515%	28,000	26444.68	23.61	26444.7	N/A	Cs-137
5	Eu-152		0.000%	13,000	0.00	0.00	0.00	N/A	Eu-152
6	H-3	5.57E-01	39.500%	120,000,000	17551.45	0.00	Not Detectable	N/A	H-3
7	Ni-63		0.000%	1,800,000	0.00	0.00	Not Detectable	N/A	Ni-63
8	Pu-238		0.000%	30	0.00	0.00	N/A	0.00	Pu-238
9	Pu-239		0.000%	28	0.00	0.00	N/A	0.00	Pu-239
10	Pu-241		0.000%	880	0.00	0.00	Not Detectable	N/A	Pu-241
11	Sr-90	7.64E-03	0.542%	8,700	240.75	0.69	240.75	N/A	Sr-90
			100.000%		44434	25.0	26882	0	
					Maximum Permissible dpm/100 cm^2				

Attachment 2-1
E900-05-015



Attachment 2-2
E900-05-015

2350 INSTRUMENT AND PROBE EFFICIENCY CHART

7/01/04 (Typical 43-68 Beta Efficiency Factors)

Different Instrument/Probe Cal Due	Cesium calib instruments (10mV/cpm)

INST #	INST C/D	43-68 PROBE #	PROBE C/D	44-10 PROBE #	PROBE C/D	BETA EFF	ALPHA EFF
79037	04/05/05	122014	04/23/05			25.2%	N/A
126188	1/27/05	099186	1/27/05			28.2%	N/A
126218	01/08/05	095080	01/09/05			27.9%	N/A

GFPC Scan MDC Calculation

MDCscan =	**4634**	dpm/100cm2

b = background in counts per minute
bi = background counts in observation interval
Ei = GFPC Detector / meter calibrated response in cpm/dpm
Es = Source efficiency emissions / disintegration
Et = Net detector efficiency
d = Index of sensitivity from MARSSIM Table 6.5 based on 95% detection, 60% false positive
p = human performance adjustment factor - unitless
SR = Scanning movement rate in centimeters per second
MDCscan = MinimumDetectable Concentration for scanning in dpm/100cm2
C= Constant to convert MDCR to MDC
Wd = Detector width in cm
A= area of probe in cm2
Oi = Observation interval in seconds
DCGLeq = Net count rate equivalent to the Adjusted DCGL
ECF = Efficiency correction factors (surface roughness)
AL = Action level, DCGLeq adjusted for d and p

b =	300 cpm	p =	0.5	Wd =	8.8 cm
SR =	10 cm	d =	1.38	DCGL =	19834 dpm/100 cm2
Ei=	0.478 cpm/dpm	Es=	0.500	A=	126 cm 2

ECF= 0.2

Es*Ei= 0.239 = Et

$\frac{Wd}{SR}$ = 0.88 = Oi (sec) $\frac{b*Oi}{60\ (sec/min)}$ = 4.4 = bi (counts)

$\frac{1}{Ei*Es*ECF*A/100*sqrt(p)}$ = 23.48 =C

$\frac{d*sqrt(bi)*60}{Oi}$ = 197 =MDCRi (net cpm) MDCRi+b= 497 = gross cpm at MDCRi

MDCRi * C = 4634 = MDCscan in dpm/100cm2

$\frac{DCGL*Ei*Es*ECF*A}{100}$ = 1195 = DCGLeq cpm

Attachment 4-1
E900-05-015

GFPC Scan MDC Calculation

MDCscan =	**9647**	dpm/100cm2

b = background in counts per minute
bi = background counts in observation interval
Ei = GFPC Detector / meter calibrated response in cpm/dpm
Es = Source efficiency emissions / disintegration
Et = Net detector efficiency
d = Index of sensitivity from MARSSIM Table 6.5 based on 95% detection, 60% false positive
p = human performance adjustment factor - unitless
SR = Scanning movement rate in centimeters per second
MDCscan = MinimumDetectable Concentration for scanning in dpm/100cm2
C= Constant to convert MDCR to MDC
Wd = Detector width in cm
A= area of probe in cm2
Oi = Observation interval in seconds
DCGLeq = Net count rate equivalent to the Adjusted DCGL
ECF = Efficiency correction factors (surface roughness)
AL = Action level, DCGLeq adjusted for d and p

b =	1300 cpm	p =	0.5	Wd =	8.8 cm
SR =	10 cm	d =	1.38	DCGL =	19834 dpm/100 cm2
Ei=	0.478 cpm/dpm	Es=	0.500	A=	126 cm 2
ECF=	0.2				

Es*Ei= 0.239 = Et

$\frac{Wd}{SR}$ = 0.88 = Oi (sec) $\frac{b*Oi}{60\ (sec/min)}$ = 19.1 = bi (counts)

$\frac{1}{Ei*Es*ECF*A/100*sqrt(p)}$ = 23.48 =C

$\frac{d*sqrt(bi)*60}{Oi}$ = 411 =MDCRi (net cpm) MDCRi+b= 1711 = gross cpm at MDCRi

MDCRi * C = 9647 = MDCscan in dpm/100cm2

$DCGL*Ei*\frac{Es*ECF*A}{100}$ = 1195 = DCGLeq cpm

High background MDC for example only

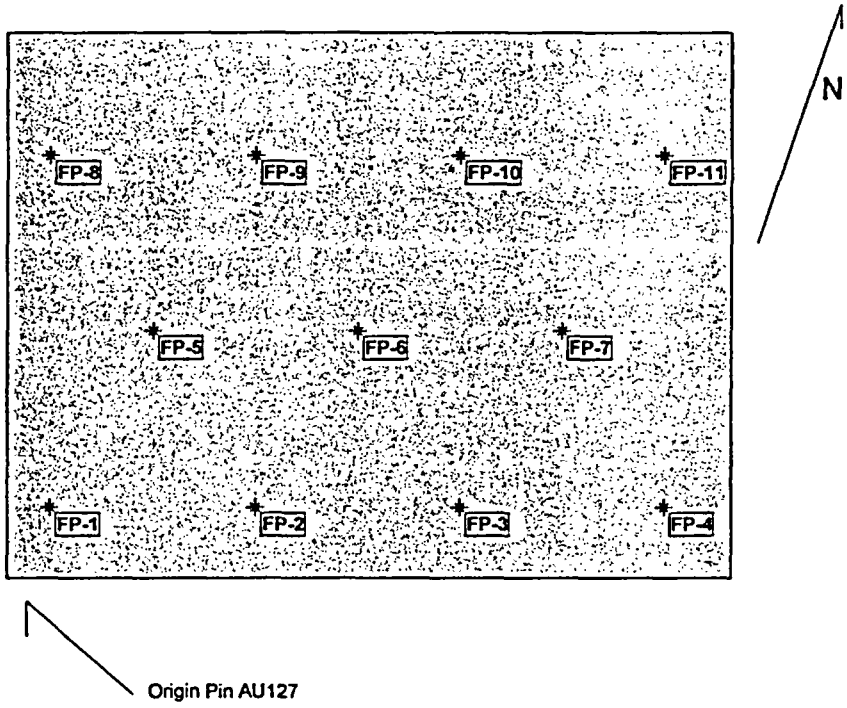
Attachment 4-2
E900-05-015

OL1 Concrete and Pavement Surfaces Survey Units

Unit	Area m2	Description
MA8-6	76	Macadam - old SNEC parking lot, grid AU127
MA8-7	76	Macadam - old SNEC parking lot, grid AU128
MA8-8	76	Macadam - old SNEC parking lot, grid AU129
MA8-9	76	Macadam - old SNEC parking lot, grid AU130
MA8-10	102	Macadam - old SNEC parking lot, primarily grid AT131
MA8-11	42	Macadam - old SNEC parking lot, primarily grid AU131
MA8-12	73	Macadam - old SNEC parking lot, V shaped on N and E sides of AV131
MA8-13	100	Macadam - old SNEC parking lot, primarily grid AV131
MA8-14	33	Pavements around line shack
MA8-15	37	Concrete slabs and blocks NW of CV
MA8-16	93	Macadam - old SSGS driveway, grid AX131
MA8-17	58	Macadam - old SSGS driveway, grid AY131
PF1	37	Concrete - PAF floor slab
DB5	54	Concrete - DSB Carport slab
DB1-1	85	Concrete - DSB floor slab, west portion
DB1-2	109	Concrete - DSB floor slab, east portion

Attachment 5-1
E900-05-015

MA8-6 Old Parking Lot grid AU127 partial



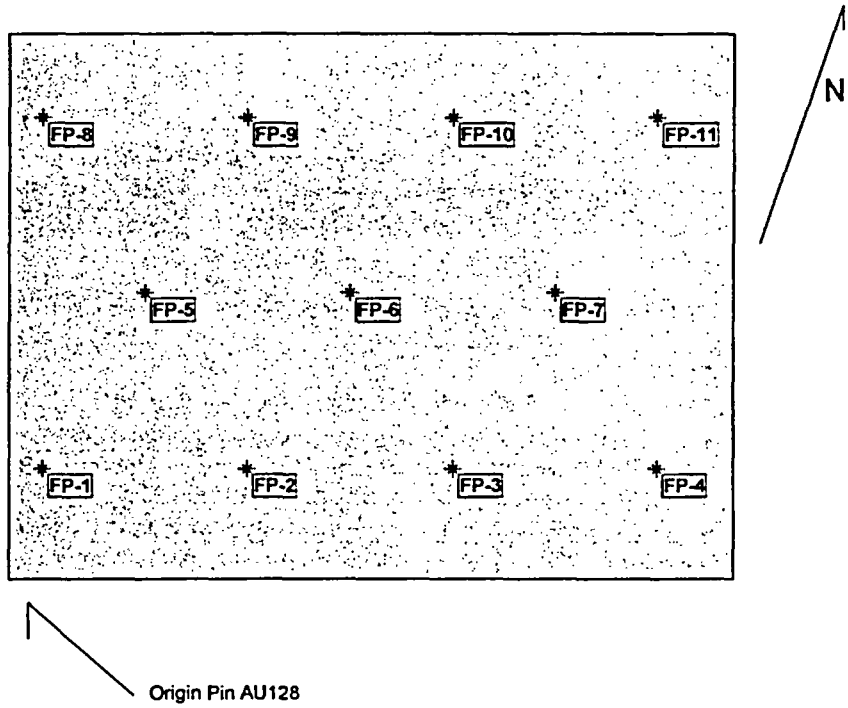
Attachment 6-1
E900-05-015

MA8-6 Old Parking Lot Grid AU127
76 square meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
1.98	3.29	FP-1	0	Systematic
11.24	3.29	FP-2	0	Systematic
20.51	3.29	FP-3	0	Systematic
29.77	3.29	FP-4	0	Systematic
6.61	11.31	FP-5	0	Systematic
15.87	11.31	FP-6	0	Systematic
25.14	11.31	FP-7	0	Systematic
1.98	19.34	FP-8	0	Systematic
11.24	19.34	FP-9	0	Systematic
20.51	19.34	FP-10	0	Systematic
29.77	19.34	FP-11	0	Systematic

Attachment 6-2
E900-05-015

MA8-7 Old Parking Lot grid AU128 partial



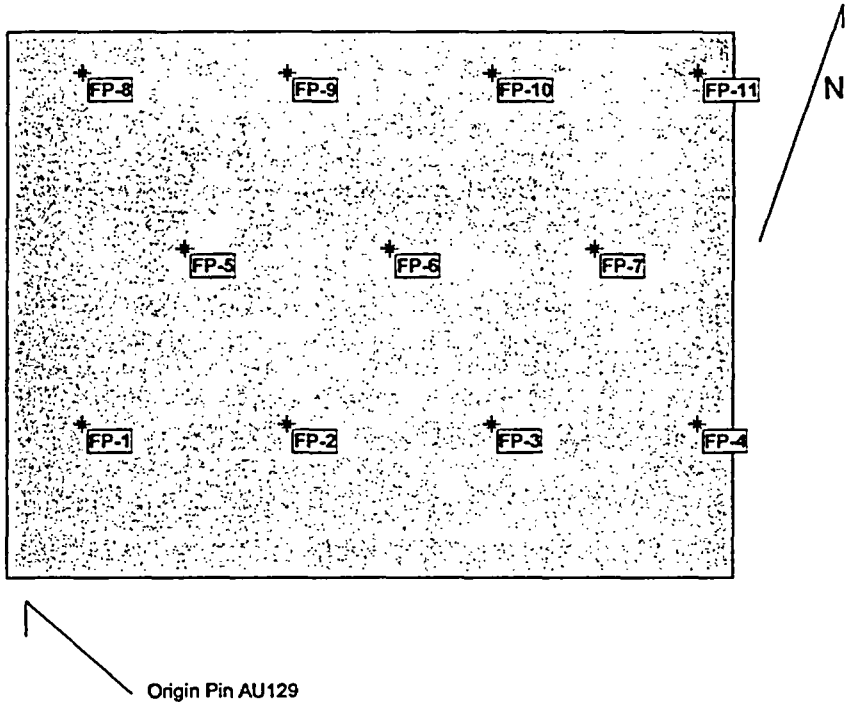
Attachment 6-3
E900-05-015

MA8-7 Old Parking Lot Grid AU128 partial
76 square meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
1.55	5.08	FP-1	0	Systematic
10.82	5.08	FP-2	0	Systematic
20.08	5.08	FP-3	0	Systematic
29.35	5.08	FP-4	0	Systematic
6.19	13.10	FP-5	0	Systematic
15.45	13.10	FP-6	0	Systematic
24.71	13.10	FP-7	0	Systematic
1.55	21.12	FP-8	0	Systematic
10.82	21.12	FP-9	0	Systematic
20.08	21.12	FP-10	0	Systematic
29.35	21.12	FP-11	0	Systematic

Attachment 6-4
E900-05-015

MA8-8 Old Parking Lot grid AU129 partial



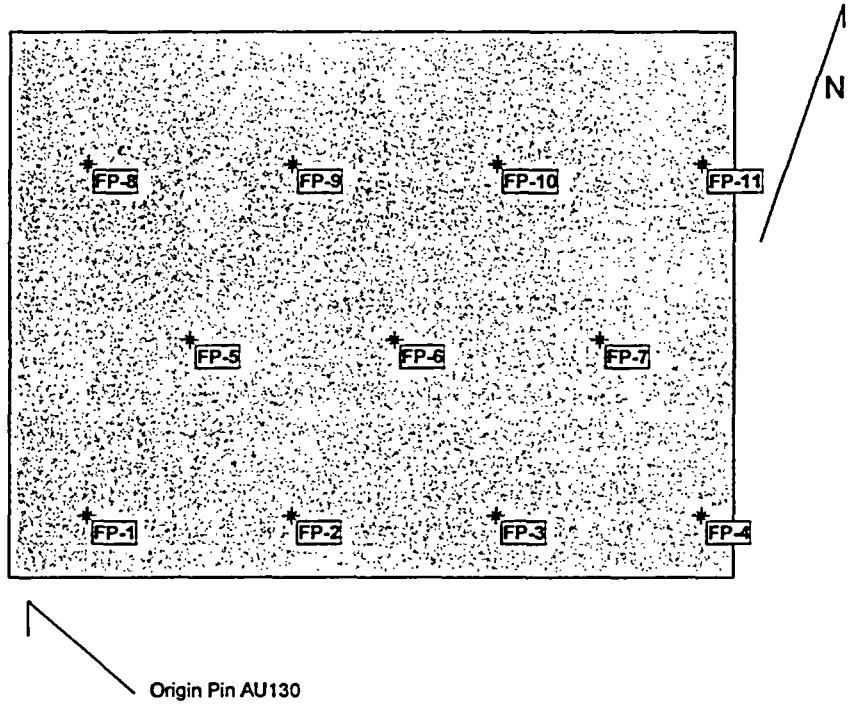
Attachment 6-5
E900-05-015

MA8-8 Old Parking Lot Grid AU129
76 square meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
3.39	7.00	FP-1	0	Systematic
12.65	7.00	FP-2	0	Systematic
21.92	7.00	FP-3	0	Systematic
31.18	7.00	FP-4	0	Systematic
8.02	15.03	FP-5	0	Systematic
17.29	15.03	FP-6	0	Systematic
26.55	15.03	FP-7	0	Systematic
3.39	23.05	FP-8	0	Systematic
12.65	23.05	FP-9	0	Systematic
21.92	23.05	FP-10	0	Systematic
31.18	23.05	FP-11	0	Systematic

Attachment 6-6
E900-05-015

MA8-9 Old Parking Lot grid AU130 partial



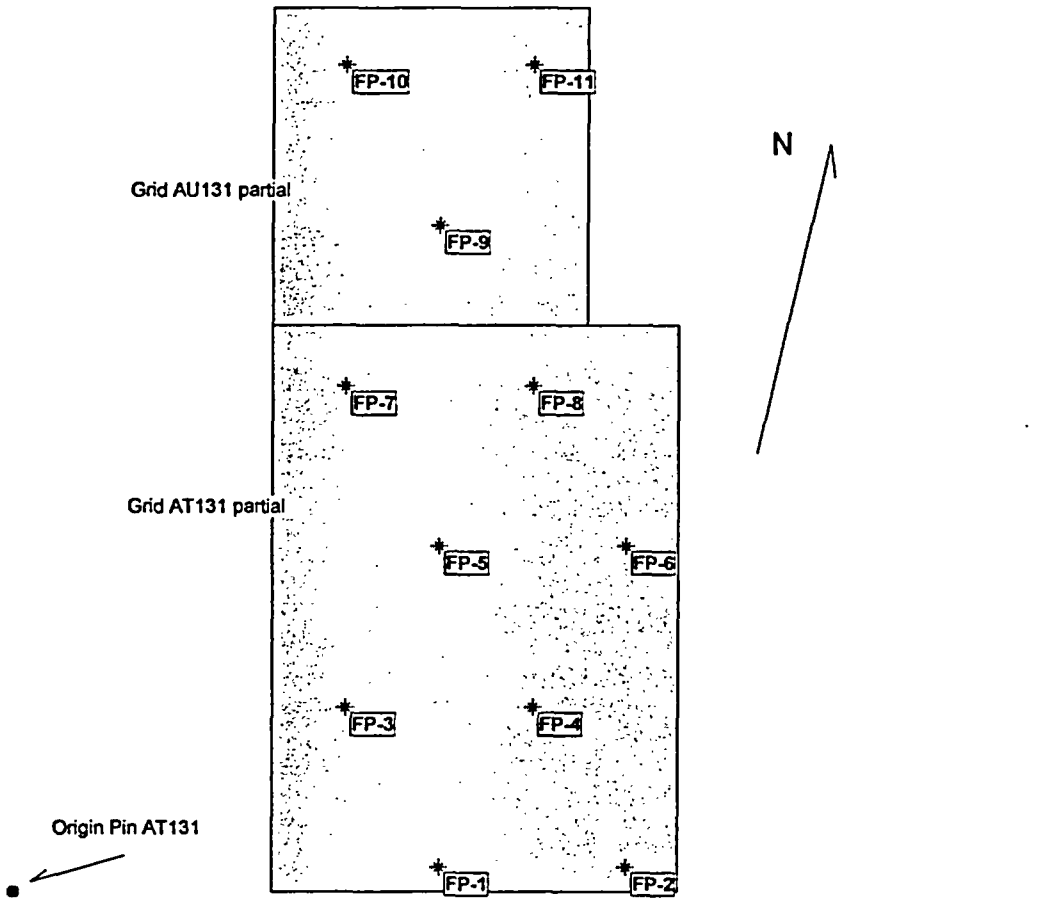
Attachment 6-7
E900-05-015

MA8-9 Old Parking Lot Grid AU130
76 square meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
3.53	2.83	FP-1	0	Systematic
12.80	2.83	FP-2	0	Systematic
22.06	2.83	FP-3	0	Systematic
31.33	2.83	FP-4	0	Systematic
8.17	10.86	FP-5	0	Systematic
17.43	10.86	FP-6	0	Systematic
26.70	10.86	FP-7	0	Systematic
3.53	18.88	FP-8	0	Systematic
12.80	18.88	FP-9	0	Systematic
22.06	18.88	FP-10	0	Systematic
31.33	18.88	FP-11	0	Systematic

Attachment 6-8
E900-05-015

MA8-10 Old Parking Lot and Driveway



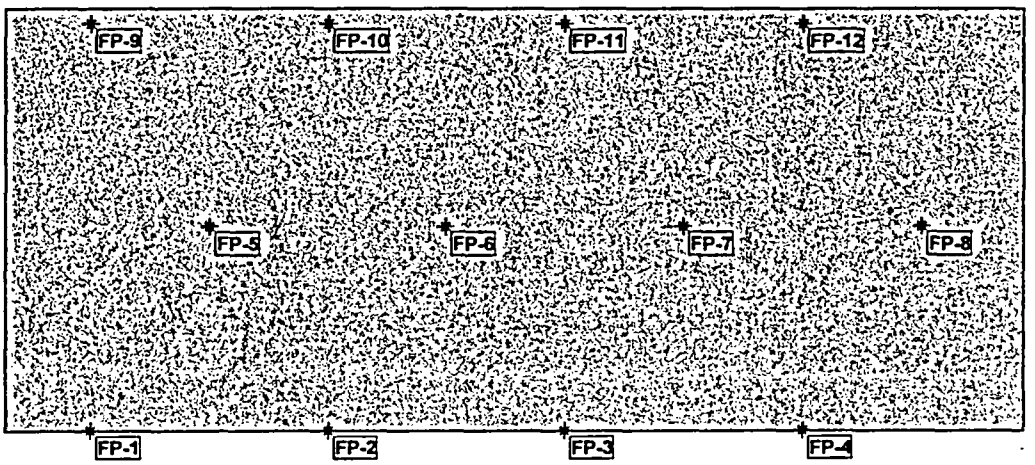
Attachment 6-9
E900-05-015

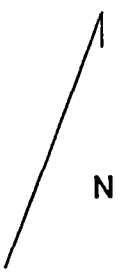
MA8-10 Old Parking Lot and Driveway
Grids AT131 and AU131 - 102 sq meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
24.30	1.45	FP-1	0	Systematic
35.03	1.45	FP-2	0	Systematic
18.94	10.74	FP-3	0	Systematic
29.66	10.74	FP-4	0	Systematic
24.30	20.02	FP-5	0	Systematic
35.03	20.02	FP-6	0	Systematic
18.94	29.31	FP-7	0	Systematic
29.66	29.31	FP-8	0	Systematic
24.30	38.60	FP-9	0	Systematic
18.94	47.89	FP-10	0	Systematic
29.66	47.89	FP-11	0	Systematic

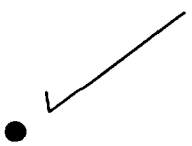
Attachment 6-10
E900-05-015

MA8-11 Driveway partial grid AU131





Origin Pin AU131



Attachment 6-11
E900-05-015

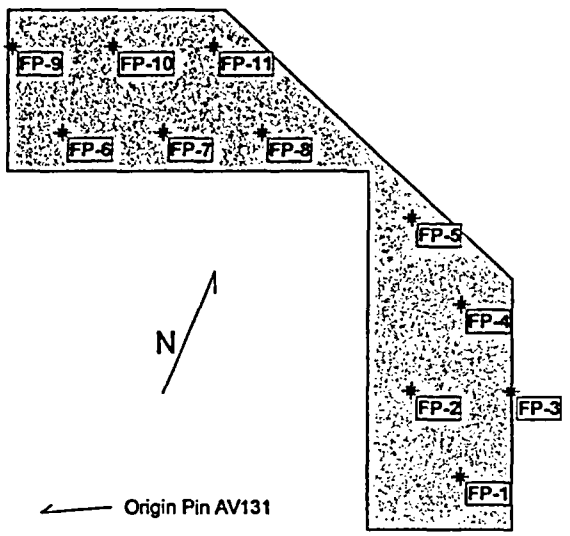
MA8-11 Driveway
Partial grid AU131 - 42 sq meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
2.74	19.05	FP-1	0	Systematic
10.39	19.05	FP-2	0	Systematic
18.04	19.05	FP-3	0	Systematic
25.70	19.05	FP-4	0	Systematic
6.56	25.68	FP-5	0	Systematic
14.22	25.68	FP-6	0	Systematic
21.87	25.68	FP-7	0	Systematic
29.52	25.68	FP-8	0	Systematic
2.74	32.31	FP-9	0	Systematic
10.39	32.31	FP-10	0	Systematic
18.04	32.31	FP-11	0	Systematic
25.70	32.31	FP-12	0	Systematic

Attachment 6-12
E900-05-015

MA8-12 Driveway

Partial Grids AW131 and AV130



Attachment 6-13
E900-05-015

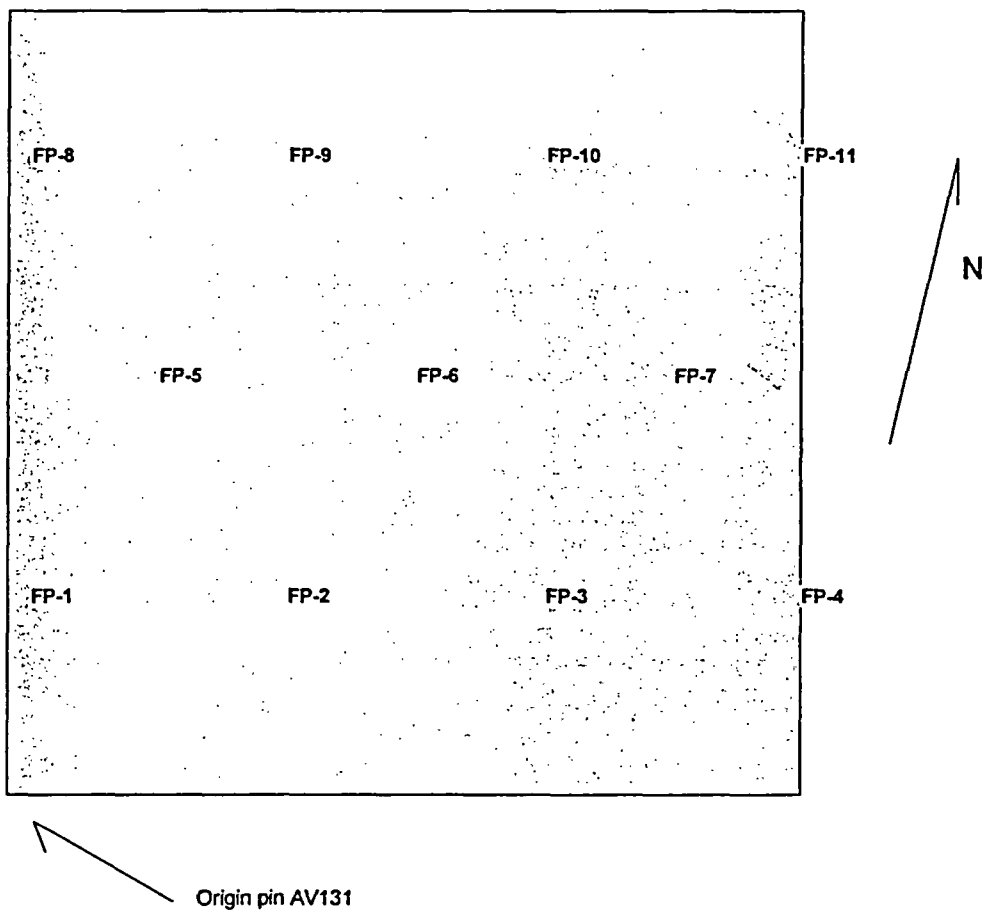
MA8-12 Driveway
Partial grids AW131and AV130 - 73 sq meters
Measurements in FEET

X Coord	Y Coord	Label	Value	Type	East	North
41.29	4.95	FP-1	0	Systematic	8.5	4.9
36.75	12.81	FP-2	0	Systematic	3.9	12.8
45.83	12.81	FP-3	0	Systematic	13.0	12.8
41.29	20.67	FP-4	0	Systematic	8.5	20.7
36.75	28.54	FP-5	0	Systematic	3.9	28.5
4.97	36.40	FP-6	0	Systematic	5.0	3.6
14.05	36.40	FP-7	0	Systematic	14.0	3.6
23.13	36.40	FP-8	0	Systematic	23.1	3.6
0.43	44.26	FP-9	0	Systematic	0.4	11.5
9.51	44.26	FP-10	0	Systematic	9.5	11.5
18.59	44.26	FP-11	0	Systematic	18.6	11.5

X Coord and Y coord are measured from pin AV131
East and North are from the actual grid pin

Attachment 6-14
E900-05-015

MA8-13 Driveway grid AV131



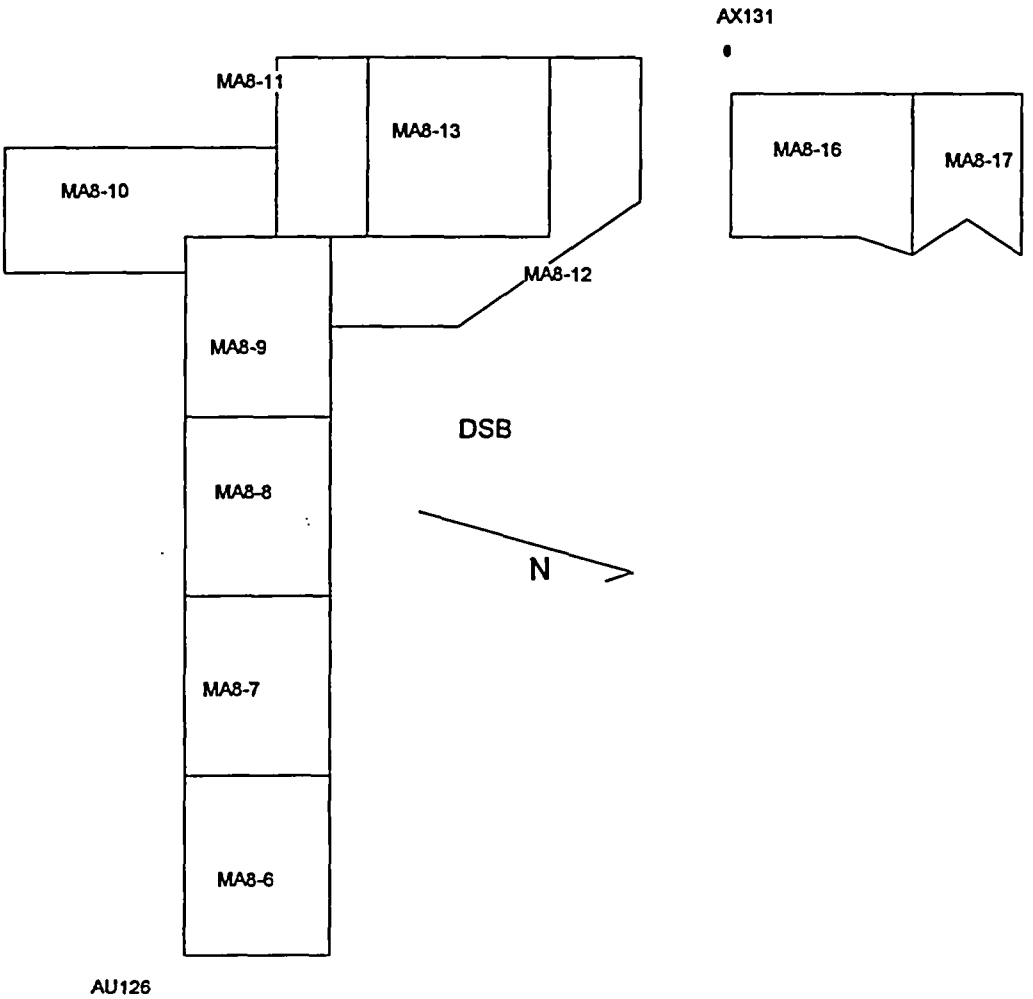
Attachment 6-15
E900-05-015

MA8-13 Driveway
Grid AV131
Measurements in FEET

X Coord	Y Coord	Label	Value	Type
0.69	9.05	FP-1	0	Systematic
11.32	9.05	FP-2	0	Systematic
21.95	9.05	FP-3	0	Systematic
32.57	9.05	FP-4	0	Systematic
6.00	18.25	FP-5	0	Systematic
16.63	18.25	FP-6	0	Systematic
27.26	18.25	FP-7	0	Systematic
0.69	27.46	FP-8	0	Systematic
11.32	27.46	FP-9	0	Systematic
21.95	27.46	FP-10	0	Systematic
32.57	27.46	FP-11	0	Systematic

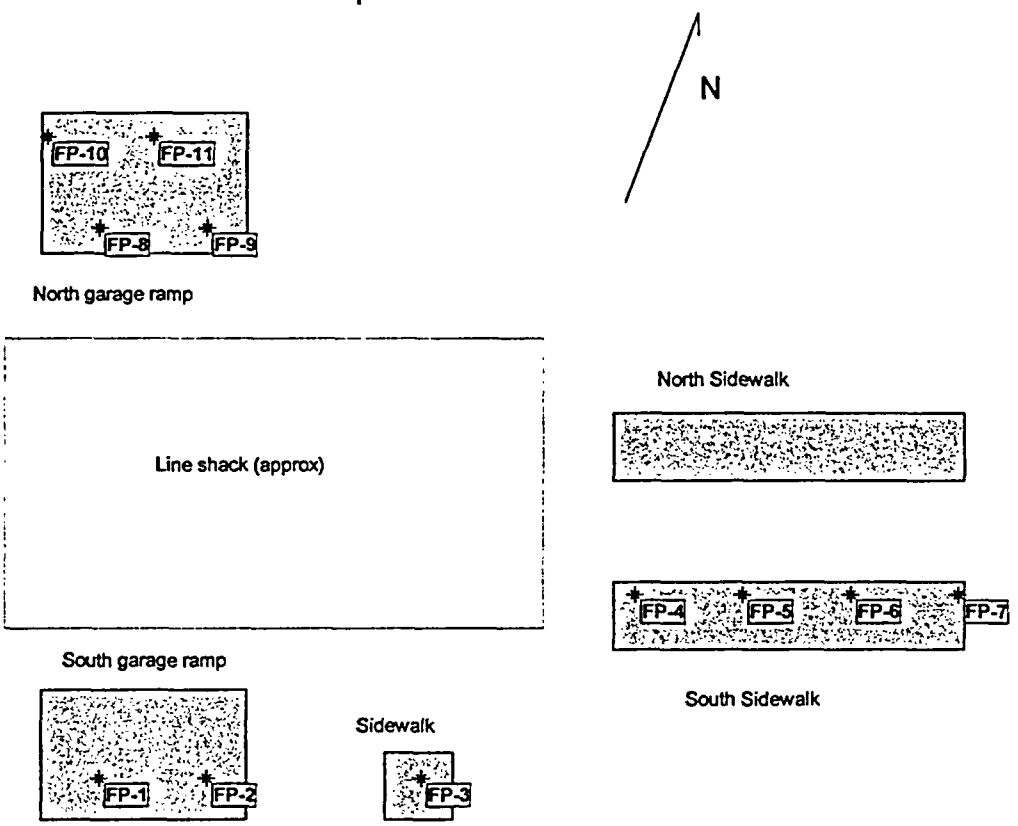
Attachment 6-16
E900-05-015

Survey Unit Layout for Parking Lot and Driveway Macadam
Survey Area OL1
Survey Units MA8-6 through MA8-13, MA8-16, and MA8-17



Attachment 6-17
E900-05-015

MA8-14 Line Shack pavements in OL1



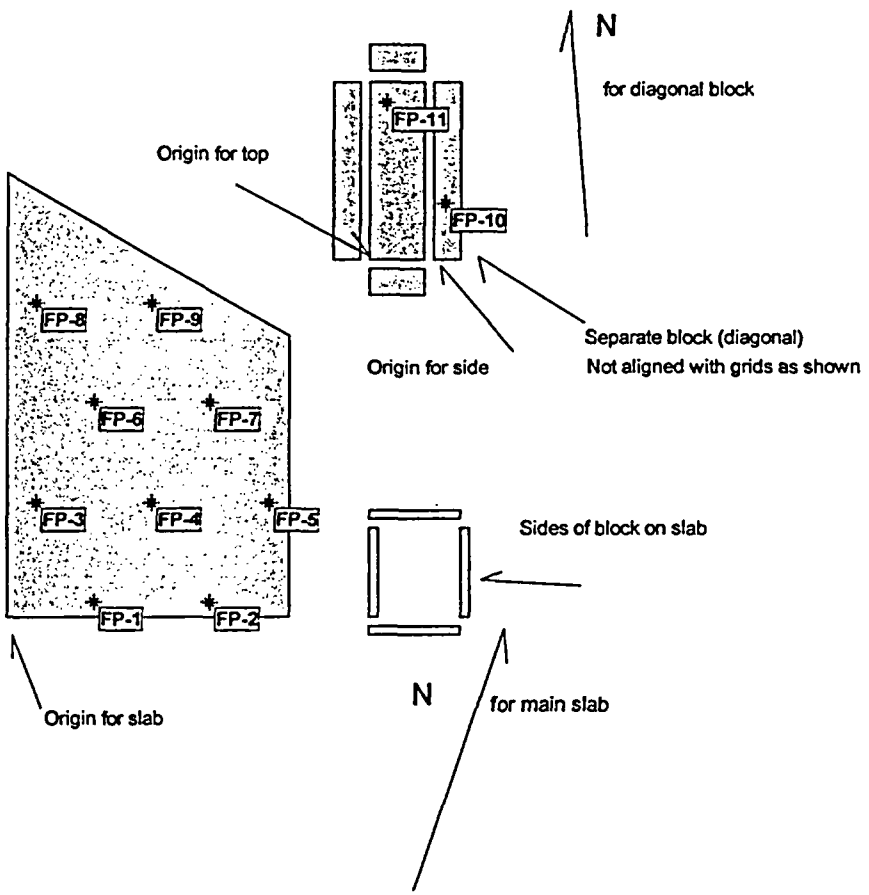
Attachment 6-18
E900-05-015

MA8-14 Line Shack external pavement
Measurements in FEET
33 sq meters
from SW corner of each slab

X Coord	Y Coord	Label	Value	Type
3.28	2.62	FP-1	0	Systematic
9.38	2.62	FP-2	0	Systematic
2.30	2.62	FP-3	0	Systematic
0.98	3.28	FP-4	0	Systematic
7.22	3.28	FP-5	0	Systematic
13.45	3.28	FP-6	0	Systematic
19.68	3.28	FP-7	0	Systematic
3.28	1.64	FP-8	0	Systematic
9.51	1.64	FP-9	0	Systematic
3.28	6.56	FP-10	0	Systematic
6.56	6.56	FP-11	0	Systematic

Attachment 6-19
E900-05-015

MA8-15 Concrete NW of CV in OL1



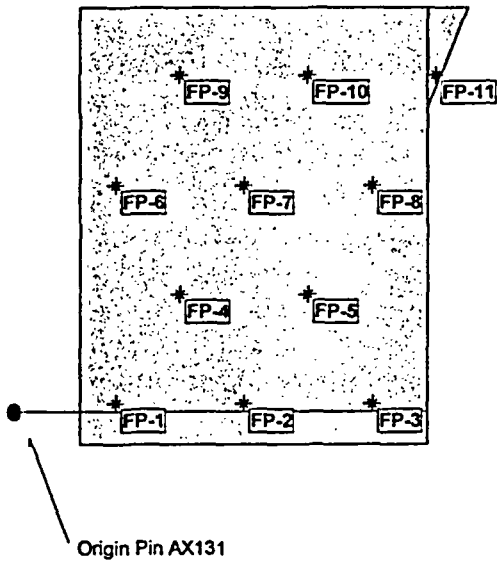
Attachment 6-20
E900-05-015

MA8-15 Concrete NW of CV on OL1
Measurements in FEET
37 sq meters
from SW corner of each slab or face

X Coord	Y Coord	Label	Value	Type	Surface
4.84	0.87	FP-1	0	Systematic	Slab
11.27	0.87	FP-2	0	Systematic	Slab
1.62	6.44	FP-3	0	Systematic	Slab
8.05	6.44	FP-4	0	Systematic	Slab
14.49	6.44	FP-5	0	Systematic	Slab
4.84	12.01	FP-6	0	Systematic	Slab
11.27	12.01	FP-7	0	Systematic	Slab
1.62	17.58	FP-8	0	Systematic	Slab
8.05	17.58	FP-9	0	Systematic	Slab
1.14	3.15	FP-10	0	Systematic	Top of separate block from far west corner
0.92	8.73	FP-11	0	Systematic	East long side of separate block from top, south end

Attachment 6-21
E900-05-015

MA8-16 Pavement in/around Grid AX131



Attachment 6-22
E900-05-015

MA8-16 Pavement West of CV in OL1
Measurements in FEET
93 sq meters
from SW corner of each slab or face

X Coord	Y Coord	Label	Value	Type	East	North
7.82	0.67	FP-1	0	Systematic	7.82	0.67
18.08	0.67	FP-2	0	Systematic	18.08	0.67
28.34	0.67	FP-3	1	Systematic	28.34	0.67
12.95	9.55	FP-4	2	Systematic	12.95	9.55
23.21	9.55	FP-5	3	Systematic	23.21	9.55
7.82	18.44	FP-6	4	Systematic	7.82	18.44
18.08	18.44	FP-7	5	Systematic	18.08	18.44
28.34	18.44	FP-8	6	Systematic	28.34	18.44
12.95	27.32	FP-9	7	Systematic	12.95	27.32
23.21	27.32	FP-10	8	Systematic	23.21	27.32
0.67	27.32	FP-11	9	Systematic	0.67	27.32

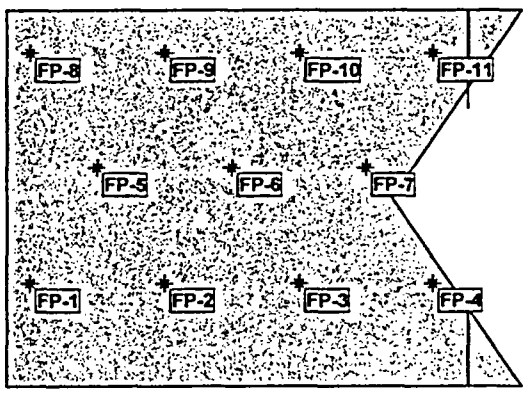
Xcoord and Ycoord are measured from the reference pin AX131
East or North are measured from the grid reference pin

East and North for FP1 through 10 are measured from the AX131 pin
FP11 is measured from the AX130 pin

Attachment 6-23
E900-05-015

MA8-17

Pavement west of CV in Grid AY131



Origin Pin AY131

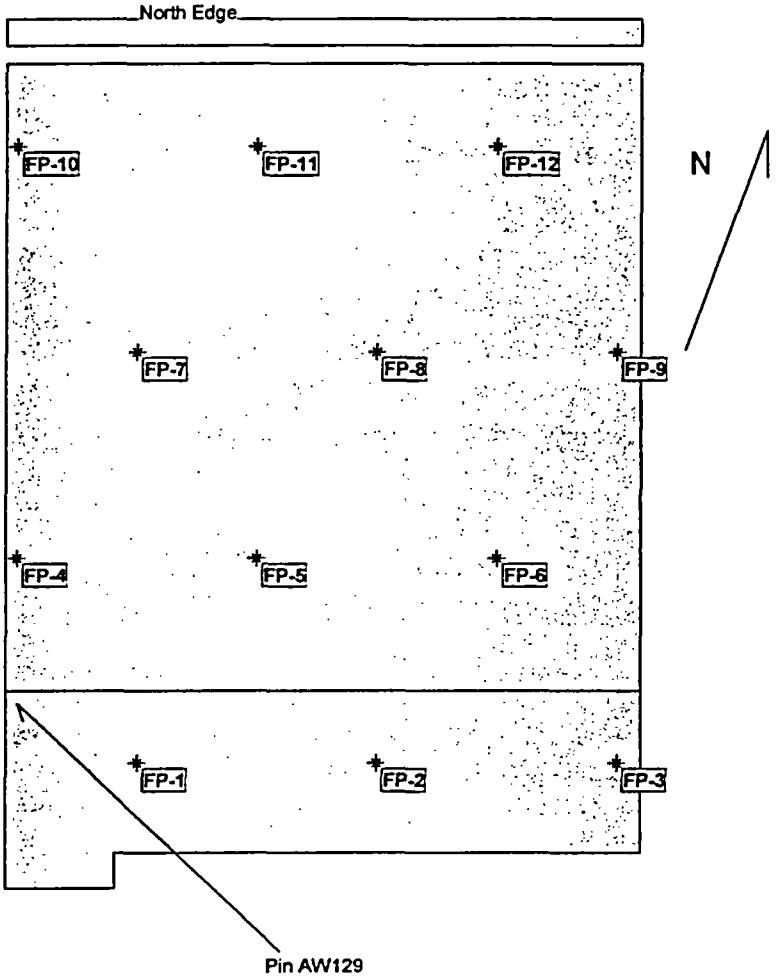
Attachment 6-24
E900-05-015

MA8-17 Pavement West of CV in OL1 Grid AY131
Measurements in FEET
58 sq meters
from SW corner of each slab or face

X Coord	Y Coord	Label	Value	Type	East	North
6.38	6.28	FP-1	0	Systematic	6.4	6.3
14.48	6.28	FP-2	0	Systematic	14.5	6.3
22.59	6.28	FP-3	0	Systematic	22.6	6.3
30.70	6.28	FP-4	0	Systematic	30.7	6.3
10.43	13.30	FP-5	0	Systematic	10.4	13.3
18.54	13.30	FP-6	0	Systematic	18.5	13.3
26.65	13.30	FP-7	0	Systematic	26.6	13.3
6.38	20.33	FP-8	0	Systematic	6.4	20.3
14.48	20.33	FP-9	0	Systematic	14.5	20.3
22.59	20.33	FP-10	0	Systematic	22.6	20.3
30.70	20.33	FP-11	0	Systematic	30.7	20.3

Xcoord and Ycoord are measured from the reference pin AY131
East or North are measured from the grid reference pin

PF1 PAF Floor Slab



Attachment 6-26
E900-05-015

PF1 PAF Floor Slab
Measurements in FEET
37 sq meters
Includes north edge / face of slab in PF1 only

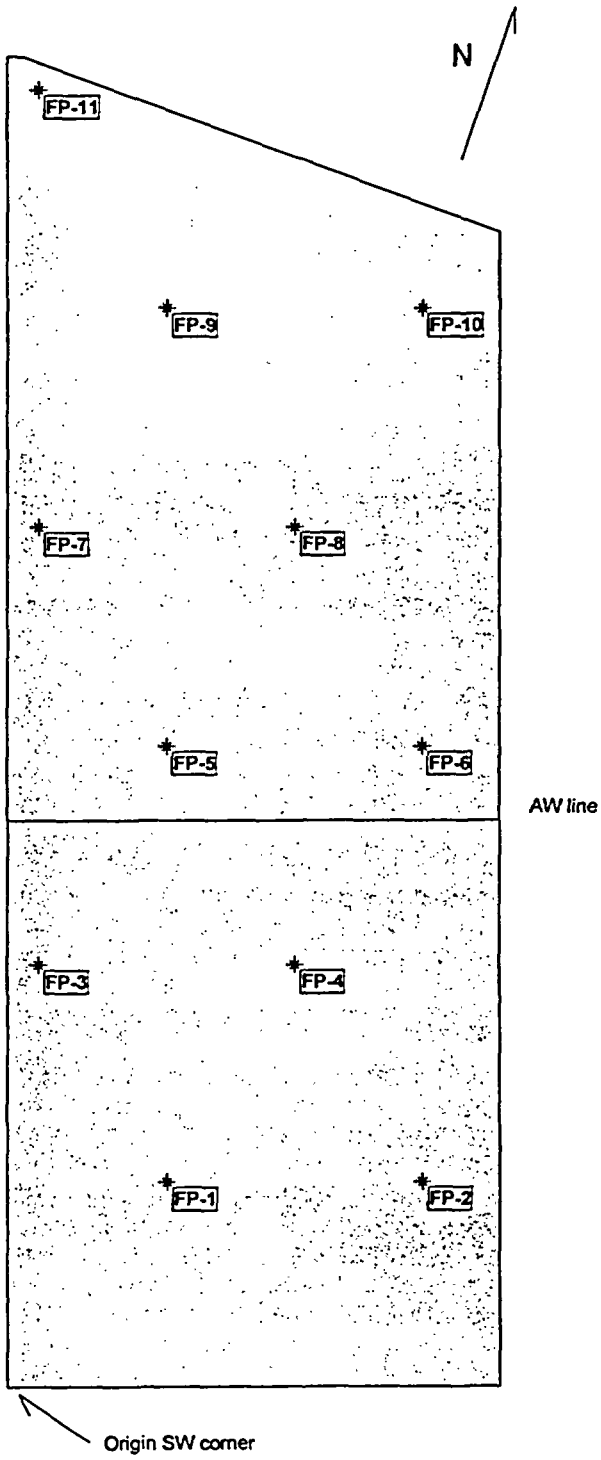
X Coord	Y Coord	Label	Value	Type	East	South
3.62	3.49	FP-1	0	Systematic	3.6	2.0
10.24	3.49	FP-2	0	Systematic	10.2	2.0
16.85	3.49	FP-3	0	Systematic	16.9	2.0
					East	North
0.32	9.22	FP-4	0	Systematic	0.3	3.7
6.93	9.22	FP-5	0	Systematic	6.9	3.7
13.54	9.22	FP-6	0	Systematic	13.5	3.7
3.62	14.95	FP-7	0	Systematic	3.6	9.4
10.24	14.95	FP-8	0	Systematic	10.2	9.4
16.85	14.95	FP-9	0	Systematic	16.9	9.4
0.32	20.68	FP-10	0	Systematic	0.3	15.2
6.93	20.68	FP-11	0	Systematic	6.9	15.2
13.54	20.68	FP-12	0	Systematic	13.5	15.2

Xcoord and Ycoord are measured from the SW corner
East, South, and North are measured from AW129

Points FP1, 2, and 3 are SOUTH of the AW line

Attachment 6-27
E900-05-015

DB5 DSB Carport Floor Slab



Attachment 6-28
E900-05-015

DB5 DSB Carport Floor Slab
Measurements in FEET
54 sq meters

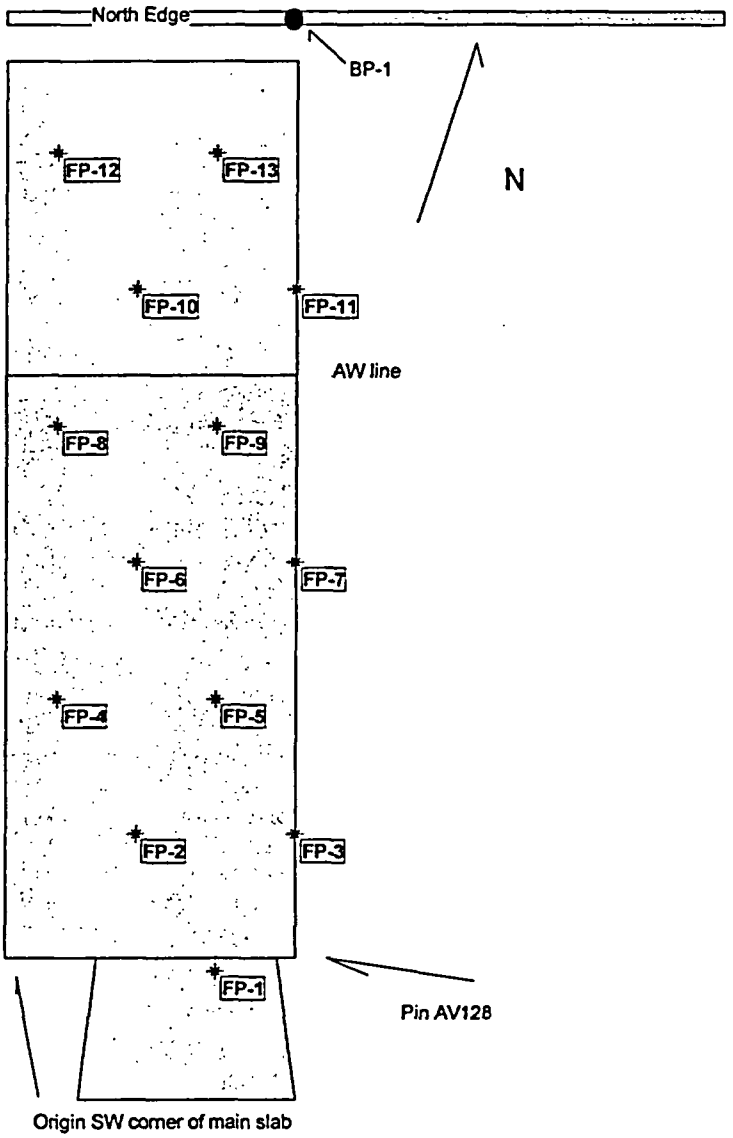
X Coord	Y Coord	Label	Value	Type
4.9	6.3	FP-1	0	Systematic
12.6	6.3	FP-2	0	Systematic
1.0	13.1	FP-3	0	Systematic
8.7	13.1	FP-4	0	Systematic
4.9	19.8	FP-5	0	Systematic
12.6	19.8	FP-6	0	Systematic
1.0	26.5	FP-7	0	Systematic
8.7	26.5	FP-8	0	Systematic
4.9	33.3	FP-9	0	Systematic
12.6	33.3	FP-10	0	Systematic
1.0	40.0	FP-11	0	Systematic

Xcoord and Ycoord are measured from the SW corner

Attachment 6-29
E900-05-015

DB1-1 West Portion of DSB Floor Slab

and North Edge of Slab



Attachment 6-30
E900-05-015

DB1-1 DSB Floor Slab West portion
Measurements in FEET
85 sq meters

Includes all north face / edge of slab in DB1(but not PF1 portion)

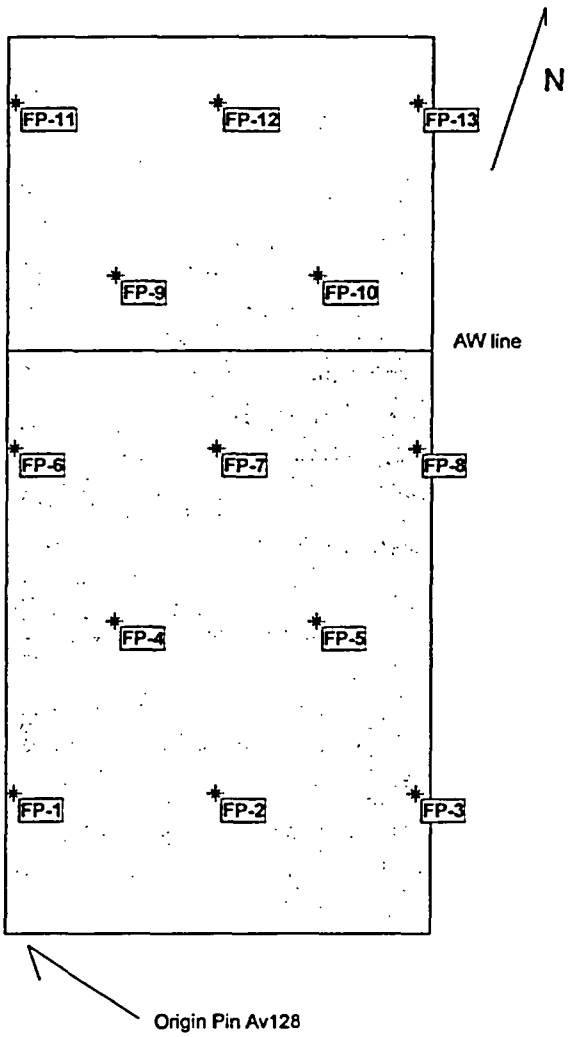
X Coord	Y Coord	Label	Value	Type
11.59	-0.75	FP-1	0	Systematic
7.20	6.85	FP-2	0	Systematic
15.98	6.85	FP-3	0	Systematic
2.82	14.45	FP-4	0	Systematic
11.59	14.45	FP-5	0	Systematic
7.20	22.05	FP-6	0	Systematic
15.98	22.05	FP-7	0	Systematic
2.82	29.65	FP-8	0	Systematic
11.59	29.65	FP-9	0	Systematic
7.20	37.25	FP-10	0	Systematic
15.98	37.25	FP-11	0	Systematic
2.82	44.85	FP-12	0	Systematic
11.59	44.85	FP-13	0	Systematic
See Below *		BP-1		Biased

Xcoord and Ycoord are measured from the SW corner
FP1 is .75 feet south of main slab on ramp

* BP1 is on the vertical north edge of slab at the 128 grid line

Attachment 6-31
E900-05-015

DB1-2 DSB Floor Slab East Portion



Attachment 6-32
E900-05-015

DB1-2 DSB Floor Slab East portion
Measurements in FEET
109 sq meters

Area: Area 1

X Coord	Y Coord	Label	Value	Type
0.44	7.76	FP-1	0	Systematic
11.57	7.76	FP-2	0	Systematic
22.70	7.76	FP-3	0	Systematic
6.00	17.41	FP-4	0	Systematic
17.14	17.41	FP-5	0	Systematic
0.44	27.05	FP-6	0	Systematic
11.57	27.05	FP-7	0	Systematic
22.70	27.05	FP-8	0	Systematic
6.00	36.69	FP-9	0	Systematic
17.14	36.69	FP-10	0	Systematic
0.44	46.33	FP-11	0	Systematic
11.57	46.33	FP-12	0	Systematic
22.70	46.33	FP-13	0	Systematic

Xcoord and Ycoord are measured from the SW corner Pin AV128
Number of fixed point incresed by 20% due to slight over size in unit

Attachment 6-33
E900-05-015

Site Report

Site Summary

Site Name: SSGS and SNEC paved surfaces

Planner(s): WJCooper

Contaminant Summary

NOTE: Surface soil DCGLw units are pCi/g.
Building surface DCGLw units are dpm/100 cm².

Contaminant	Type	DCGLw	Screening Value Used?	Area (m²)	Area Factor
Cs-137	Building Surface	19,834	No	36	1
				25	1.2
				16	1.5
				9	2.2
				4	3.7
				1	11.2

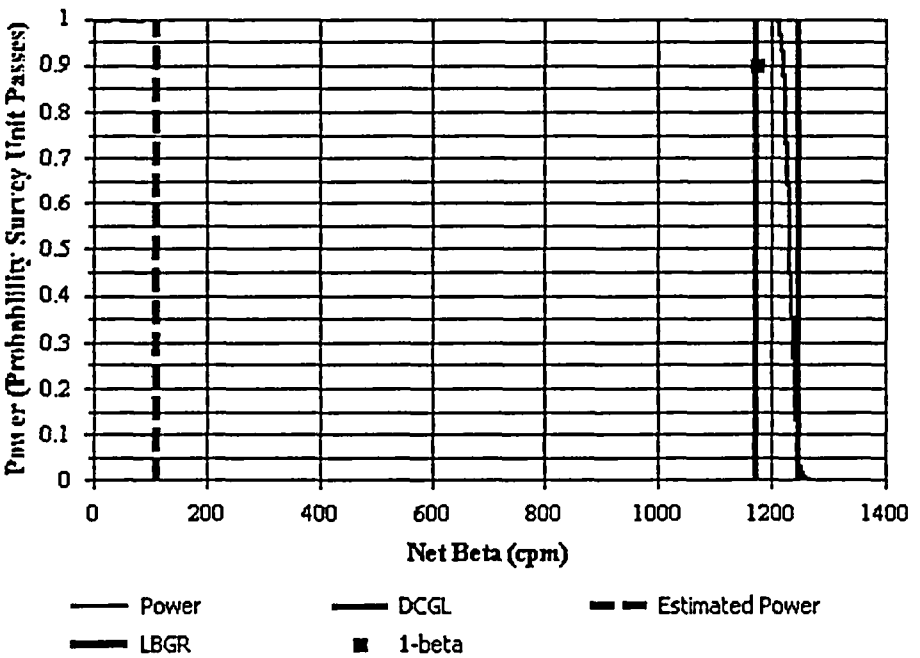
Attachment 7-1
E900-05-015

Building Surface Survey Plan

Survey Plan Summary

Site:	SSGS and SNEC paved surfaces		
Planner(s):	WJCooper		
Survey Unit Name:	MAcadam surfaces in OL1 - Parking lot, driveways		
Comments:	multiple units max 100 m2		
Area (m²):	100	Classification:	1
Selected Test:	Sign	Estimated Sigma (cpm):	25.4
DCGL (cpm):	1,250	Sample Size (N):	11
LBGR (cpm):	1,175	Estimated Conc. (cpm):	112
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.100	EMC Sample Size (N):	11

Prospective Power Curve



Attachment 7-2
E900-05-015

Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Cs-137	19,834

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 19,834
Total Efficiency: 0.05
Gross Beta DCGLw (cpm): 1,250

ID	Type	Mode	Area (cm²)
2	43-68	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Cs-137	187.87	1.0000	0.24	0.20	0.0478

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 383 ± 24 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
macadam	6	271	7.2	1,263

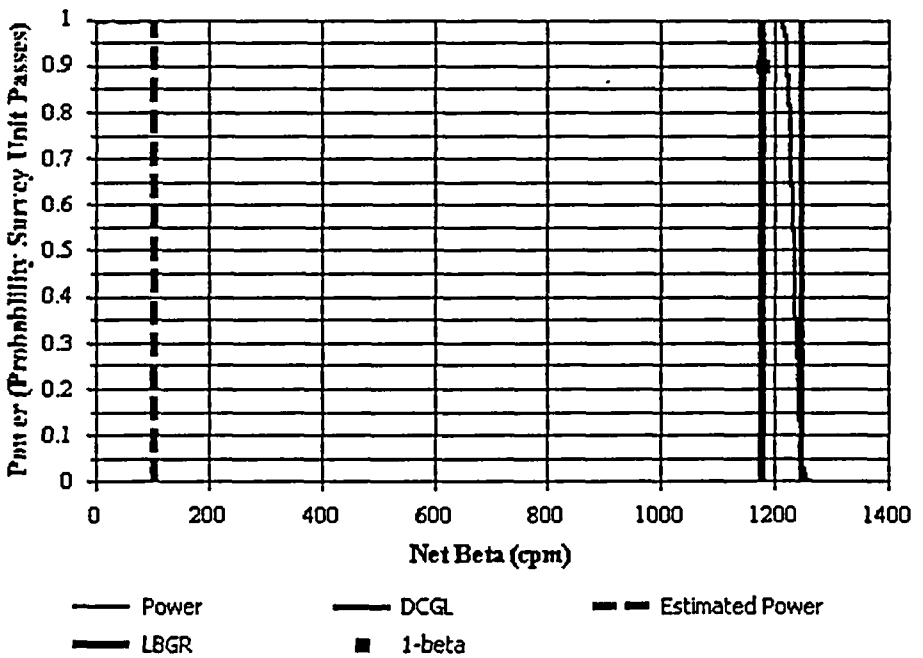
Attachment 7-3
E900-05-015

Building Surface Survey Plan

Survey Plan Summary

Site:	SSGS and SNEC paved surfaces		
Planner(s):	WJCooper		
Survey Unit Name:	Concrete surfaces in OL1 DSB,PAF etc.		
Comments:	Max unit area 109 m2, most 100 m2 or less		
Area (m²):	109	Classification:	1
Selected Test:	Sign	Estimated Sigma (cpm):	23.8
DCGL (cpm):	1,250	Sample Size (N):	11
LBGR (cpm):	1,180	Estimated Conc. (cpm):	103
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.100	EMC Sample Size (N):	11

Prospective Power Curve



Attachment 7-4
E900-05-015

Building Surface Survey Plan

Contaminant Summary

Contaminant	DCGLw (dpm/100 cm²)
Cs-137	19,834

Beta Instrumentation Summary

Gross Beta DCGLw (dpm/100 cm²): 19,834
Total Efficiency: 0.05
Gross Beta DCGLw (cpm): 1,250

ID	Type	Mode	Area (cm²)
2	43-68	Beta	126

Contaminant	Energy[1]	Fraction[2]	Inst. Eff.	Surf. Eff.	Total Eff.
Cs-137	187.87	1.0000	0.24	0.20	0.0478

[1] Average beta energy (keV) [N/A indicates alpha emission]
[2] Activity fraction

Gross Survey Unit Mean (cpm): 366 ± 17 (1-sigma)
Count Time (min): 1

Material	Number of BKG Counts	Average (cpm)	Standard Deviation (cpm)	MDC (dpm/100 cm²)
DSB pads	6	262.8	16.3	1,244

Attachment 7-5
E900-05-015

Williamsburg Concrete Background Measurements

37122N21	Instrument 95348	RLM6220	Time	Detector	Counts	Count Time (sec)	Mode	Designator		FSS-001	BHB
0	BKGND	1/4/2002	8:52	1	7.26E+03	1800	SCL	Inital Background	β		
1	Source Check	1/4/2002	9:07	1	1.79E+05	60	SCL	Source	β		
2	BKGND	1/4/2002	10:05	2	4.40E+01	1800	SCL	Inital Background	α	Concrete CF(com) ⇒	0
14	Source Check	1/4/2002	10:39	2	1.51E+05	60	SCL	Source	α	Shielded	Unshielded
15	CON A1S	1/4/2002	13:00	1	2.78E+02	60	SCL	Shielded	β	2.78E+02	
16	CON A1U	1/4/2002	13:02	1	3.88E+02	60	SCL	Unshielded	β		3.88E+02
17	CON A2S	1/4/2002	13:20	1	2.39E+02	60	SCL	Shielded	β	2.39E+02	
18	CON A2U	1/4/2002	13:21	1	2.22E+02	60	SCL	Unshielded	β		2.22E+02
19	CON A3S	1/4/2002	13:28	1	2.39E+02	60	SCL	Shielded	β	2.39E+02	
20	CON A3U	1/4/2002	13:30	1	2.62E+02	60	SCL	Unshielded	β		2.62E+02
21	CON A4S	1/4/2002	13:36	1	2.45E+02	60	SCL	Shielded	β	2.45E+02	
22	CON A4U	1/4/2002	13:38	1	2.71E+02	60	SCL	Unshielded	β		2.71E+02
23	CON A5S	1/4/2002	13:58	1	2.00E+02	60	SCL	Shielded	β	2.00E+02	
24	CON A5U	1/4/2002	14:00	1	2.82E+02	60	SCL	Unshielded	β		2.82E+02
25	CON A6S	1/4/2002	14:03	1	1.84E+02	60	SCL	Shielded	β	1.84E+02	
26	CON A6U	1/4/2002	14:05	1	3.10E+02	60	SCL	Unshielded	β		3.10E+02
27	CON A7S	1/4/2002	14:09	1	1.98E+02	60	SCL	Shielded	β	1.98E+02	
28	CON A7U	1/4/2002	14:10	1	3.15E+02	60	SCL	Unshielded	β		3.15E+02
29	CON A8S	1/4/2002	14:19	1	2.34E+02	60	SCL	Shielded	β	2.34E+02	
30	CON A8S	1/4/2002	14:22	1	2.31E+02	60	SCL	Shielded	β	2.31E+02	
31	CON A8U	1/4/2002	14:24	1	2.88E+02	60	SCL	Unshielded	β		2.88E+02
32	CON A9S	1/4/2002	14:31	1	2.65E+02	60	SCL	Shielded	β	2.65E+02	
33	CON A9U	1/4/2002	14:33	1	2.89E+02	60	SCL	Unshielded	β		2.89E+02
34	CON A10S	1/4/2002	14:42	1	2.46E+02	60	SCL	Shielded	β	2.46E+02	
35	CON A10U	1/4/2002	14:43	1	3.16E+02	60	SCL	Unshielded	β		3.16E+02
36	CON A11S	1/4/2002	15:10	1	1.95E+02	60	SCL	Shielded	β	1.95E+02	
37	CON A11U	1/4/2002	15:12	1	2.94E+02	60	SCL	Unshielded	β		2.94E+02
38	CON A12S	1/4/2002	15:13	1	2.21E+02	60	SCL	Shielded	β	2.21E+02	
39	CON A12U	1/4/2002	15:14	1	2.84E+02	60	SCL	Unshielded	β		2.84E+02
40	CON A13S	1/4/2002	15:23	1	1.74E+02	60	SCL	Shielded	β	1.74E+02	
41	CON A13U	1/4/2002	15:24	1	2.94E+02	60	SCL	Unshielded	β		2.94E+02
42	CON A14S	1/4/2002	15:25	1	1.96E+02	60	SCL	Shielded	β	1.96E+02	
43	CON A14U	1/4/2002	15:26	1	3.33E+02	60	SCL	Unshielded	β		3.33E+02
44	CON A15S	1/4/2002	15:28	1	2.16E+02	60	SCL	Shielded	β	2.16E+02	
45	CON A15U	1/4/2002	15:29	1	3.45E+02	60	SCL	Unshielded	β		3.45E+02
46	CON A16S	1/4/2002	15:30	1	1.83E+02	60	SCL	Shielded	β	1.83E+02	
47	CON A16U	1/4/2002	15:31	1	3.13E+02	60	SCL	Unshielded	β		3.13E+02
48	CON A17S	1/4/2002	15:33	1	1.82E+02	60	SCL	Shielded	β	1.82E+02	
49	CON A17U	1/4/2002	15:34	1	3.22E+02	60	SCL	Unshielded	β		3.22E+02
50	CON A18S	1/4/2002	15:35	1	1.84E+02	60	SCL	Shielded	β	1.84E+02	
51	CON A18U	1/4/2002	15:36	1	3.24E+02	60	SCL	Unshielded	β		3.24E+02
52	CON A19S	1/4/2002	15:37	1	1.91E+02	60	SCL	Shielded	β	1.91E+02	
53	CON A19U	1/4/2002	15:39	1	3.07E+02	60	SCL	Unshielded	β		3.07E+02
54	CON A20S	1/4/2002	15:40	1	1.94E+02	60	SCL	Shielded	β	1.94E+02	
55	CON A20U	1/4/2002	15:41	1	3.33E+02	60	SCL	Unshielded	β		3.33E+02
56	CON A21S	1/4/2002	15:57	1	2.23E+02	60	SCL	Shielded	β	2.23E+02	
57	CON A21U	1/4/2002	15:58	1	2.92E+02	60	SCL	Unshielded	β		2.92E+02
58	CON A22S	1/4/2002	15:59	1	1.72E+02	60	SCL	Shielded	β	1.72E+02	
59	CON A22U	1/4/2002	16:00	1	2.80E+02	60	SCL	Unshielded	β		2.80E+02
60	CON A23S	1/4/2002	16:01	1	1.94E+02	60	SCL	Shielded	β	1.94E+02	
61	CON A23U	1/4/2002	16:02	1	3.29E+02	60	SCL	Unshielded	β		3.29E+02
62	CON A24S	1/4/2002	16:04	1	1.87E+02	60	SCL	Shielded	β	1.87E+02	
63	CON A24U	1/4/2002	16:05	1	3.48E+02	60	SCL	Unshielded	β		3.48E+02
64	CON A25S	1/4/2002	16:06	1	2.07E+02	60	SCL	Shielded	β	2.07E+02	
65	CON A25U	1/4/2002	16:07	1	3.72E+02	60	SCL	Unshielded	β		3.72E+02
66	CON A26S	1/4/2002	16:09	1	2.09E+02	60	SCL	Shielded	β	2.09E+02	
67	CON A26U	1/4/2002	16:10	1	3.26E+02	60	SCL	Unshielded	β		3.26E+02
68	CON A27S	1/4/2002	16:11	1	2.07E+02	60	SCL	Shielded	β	2.07E+02	
69	CON A27U	1/4/2002	16:12	1	3.30E+02	60	SCL	Unshielded	β		3.30E+02
70	CON A28S	1/4/2002	16:14	1	2.30E+02	60	SCL	Shielded	β	2.30E+02	
71	CON A28U	1/4/2002	16:15	1	3.06E+02	60	SCL	Unshielded	β		3.06E+02
72	CON A29S	1/4/2002	16:20	1	2.13E+02	60	SCL	Shielded	β	2.13E+02	
73	CON A29U	1/4/2002	16:21	1	2.58E+02	60	SCL	Unshielded	β		2.58E+02
74	CON A30S	1/4/2002	16:24	1	2.33E+02	60	SCL	Shielded	β	2.33E+02	
75	CON A30U	1/4/2002	16:25	1	2.89E+02	60	SCL	Unshielded	β		2.89E+02
76	CON A31S	1/4/2002	16:28	1	1.84E+02	60	SCL	Shielded	β	1.84E+02	
77	CON A31U	1/4/2002	16:29	1	2.63E+02	60	SCL	Unshielded	β		2.63E+02
—	Source Check	1/4/2002	17:27	1	1.70E+05	60	SCL	—	β		
										Minimum ⇒	1.72E+02	2.22E+02
										Maximum ⇒	2.78E+02	3.88E+02
										Mean ⇒	2.11E+02	3.06E+02
										Sigma ⇒	2.69E+01	3.45E+01

ATTACHMENT 6 . 1

Attachment 8-1
E900-05-015

OL1 surfaces variability measurements 3/7/05

Parking Lot

OW	CW
411	271
384	267
406	274
344	259
371	276
383	279
383.2	271.0
24.4	7.2

Average
Std Dev

DSB Pad

OW	CW
368	247
350	267
355	249
386	258
388	292
350	264
366.2	262.8
17.4	16.3

SSGS Boiler pad

OW	CW
368	266
444	289
335	289
338	293
331	265
374	295
365.0	282.8
42.7	13.6

Average
Std Dev

OW - Open (unshielded) window
CW - Closed (shielded) window

Attachment 8-2
E900-05-015

ORIGINAL

RADIATION SURVEY FORM	OL-1		FSS-1338

Class 1 Areas not previously surveyed

N/A		1	181
Static readings needed for variability study		3/07/05	0923
D. Houtz		N/A	
R. Shepherd			3/15/05

2350 / 44-68		N/A			N/A
126188 / 099186					
2/08/06 / 2/08/06					
27.5					
N/A					
N/A					
N/A					
Sat. ☒	Unsat. ☐		Sat. ☐	Unsat. ☐	Sat. ☐	Unsat. ☐

Ambient air temperature at survey location was 50 degrees Fahrenheit.
Static point readings on concrete structures for variability study.

See attached map.

Attachment 8-3
E900-05-015

Notes:

ORIGINAL

FSS-1338

D. Houtz

2	OLPRK FP1S	3/7/05	9:23	1	271	60	SCL	
3	OLPRK FP1U	3/7/05	9:24	1	411	60	SCL	
4	OLPRK FP2U	3/7/05	9:27	1	384	60	SCL	
5	OLPRK FP2S	3/7/05	9:29	1	267	60	SCL	
6	OLPRK FP3S	3/7/05	9:31	1	274	60	SCL	
7	OLPRK FP3U	3/7/05	9:33	1	406	60	SCL	
8	OLPRK FP4S	3/7/05	9:35	1	259	60	SCL	
9	OLPRK FP4U	3/7/05	9:37	1	344	60	SCL	
10	OLPRK FP5S	3/7/05	9:39	1	276	60	SCL	
11	OLPRK FP5U	3/7/05	9:41	1	371	60	SCL	
12	OLPRK FP6S	3/7/05	9:43	1	279	60	SCL	
14	OLPRK FP6U	3/7/05	9:48	1	383	60	SCL	
15	DSBP FP1S	3/7/05	9:53	1	247	60	SCL	
16	DSBP FP1U	3/7/05	9:56	1	368	60	SCL	
17	DSBP FP2S	3/7/05	10:13	1	267	60	SCL	
18	DSBP FP2U	3/7/05	10:15	1	350	60	SCL	
19	DSBP FP3S	3/7/05	10:17	1	249	60	SCL	
20	DSBP FP3U	3/7/05	10:18	1	355	60	SCL	
21	DSBP FP4S	3/7/05	10:21	1	258	60	SCL	
22	DSBP FP4U	3/7/05	10:22	1	386	60	SCL	
23	DSBP FP5S	3/7/05	10:24	1	292	60	SCL	
24	DSBP FP5U	3/7/05	10:25	1	388	60	SCL	
25	DSBP FP6S	3/7/05	10:28	1	264	60	SCL	
26	DSBP FP6U	3/7/05	10:29	1	350	60	SCL	
27	EBP FP1S	3/7/05	10:53	1	266	60	SCL	
28	EBP FP1U	3/7/05	10:55	1	368	60	SCL	
29	EBP FP2S	3/7/05	10:58	1	289	60	SCL	
30	EBP FP2U	3/7/05	11:00	1	444	60	SCL	
31	EBP FP3S	3/7/05	11:03	1	289	60	SCL	
32	EBP FP3U	3/7/05	11:04	1	335	60	SCL	
33	EBP FP4S	3/7/05	11:07	1	293	60	SCL	
34	EBP FP4U	3/7/05	11:08	1	338	60	SCL	
35	EBP FP5S	3/7/05	11:11	1	265	60	SCL	
36	EBP FP5U	3/7/05	11:13	1	331	60	SCL	
37	EBP FP6S	3/7/05	11:16	1	295	60	SCL	
38	EBP FP6U	3/7/05	11:17	1	374	60	SCL	

OLPRK = Old Parking Lot DSBP = DSB Pad EBP = Exposed Boiler Pad FP = Fixed point
S = shielded reading U = unshielded reading

Attachment 8-4
E900-05-015

ORIGINAL

FSS-1338

D. Houtz

39	TRP FP1S	3/7/05	13:13	1	378	60	SCL	
40	TRP FP1U	3/7/05	13:15	1	487	60	SCL	
41	TRP FP2S	3/7/05	13:17	1	353	60	SCL	
42	TRP FP2U	3/7/05	13:19	1	490	60	SCL	
43	TRP FP3S	3/7/05	13:21	1	327	60	SCL	
44	TRP FP3U	3/7/05	13:22	1	516	60	SCL	
45	TRP FP4S	3/7/05	13:24	1	342	60	SCL	
46	TRP FP4U	3/7/05	13:25	1	503	60	SCL	
47	TRP FP5S	3/7/05	13:27	1	306	60	SCL	
48	TRP FP5U	3/7/05	13:29	1	415	60	SCL	
49	TRP FP6S	3/7/05	13:31	1	314	60	SCL	
50	TRP FP6U	3/7/05	13:32	1	419	60	SCL	

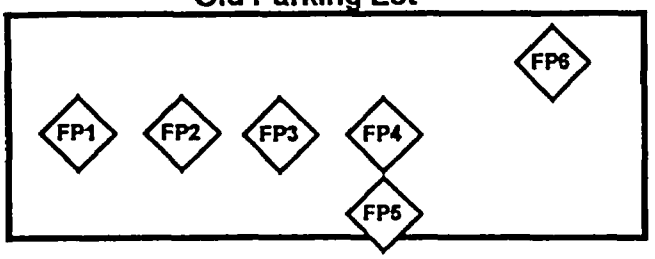
TRP = Transformer Repair Pad FP = Fixed point S = shielded reading U = unshielded reading

Attachment 8-5
E900-05-015

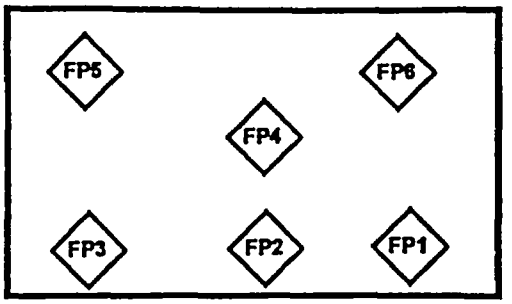
ORIGINAL

ECOLOGICAL SURVEY CONTINUATION FORM | FSS-1338

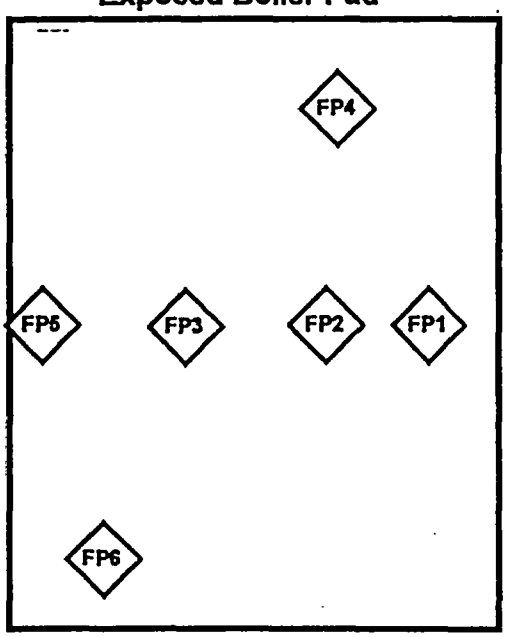
Old Parking Lot



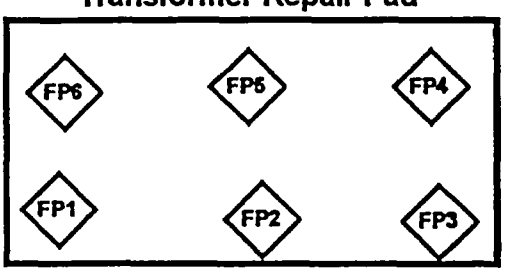
DSB Pad



Exposed Boiler Pad



Transformer Repair Pad



Attachment 8-6
E900-05-015

Exhibit 1
Survey Unit Inspection Check Sheet

ORIGINAL

SECTION 1 - SURVEY UNIT INSPECTION DESCRIPTION

Survey Unit #	OL1	Survey Unit Location	CV / SSGS Concrete
Date	4/26/05	Time	0930
Inspection Team Members	R. Shepherd		

SECTION 2 - SURVEY UNIT INSPECTION SCOPE

Inspection Requirements (Check the appropriate Yes/No answer.)	Yes	No	N/A
1. Have sufficient surveys (i.e., post remediation, characterization, etc.) been obtained for the survey unit?	X		
2. Do the surveys (from Question 1) demonstrate that the survey unit will most likely pass the FSS?	X		
3. Is the physical work (i.e., remediation & housekeeping) in or around the survey unit complete?		X	
4. Have all tools, non-permanent equipment, and material not needed to perform the FSS been removed?		X	
5. Are the survey surfaces relatively free of loose debris (i.e., dirt, concrete dust, metal filings, etc.)?		X	
6. Are the survey surfaces relatively free of liquids (i.e., water, moisture, oil, etc.)?	X		
7. Are the survey surfaces free of all paint, which has the potential to shield radiation?		X	
8. Have the Surface Measurement Test Areas (SMTA) been established? (Refer to Exhibit 2 for instructions.)	X		
9. Have the Surface Measurement Test Areas (SMTA) data been collected? (Refer to Exhibit 2 for instructions.)	X		
10. Are the survey surfaces easily accessible? (No scaffolding, high reach, etc. is needed to perform the FSS)	X		
11. Is lighting adequate to perform the FSS?			X
12. Is the area industrially safe to perform the FSS? (Evaluate potential fall & trip hazards, confined spaces, etc.)	X		
13. Have photographs been taken showing the overall condition of the area?	X		
14. Have all unsatisfactory conditions been resolved?		X	

NOTE: If a "No" answer is obtained above, the inspector should immediately correct the problem or initiate corrective actions through the responsible site department, as applicable. Document actions taken and/or justifications in the "Comments" section below. Attach additional sheets as necessary.

Comments:

Response to Question 3,4,5

Tools and equipment are stored on concrete surfaces, dirt and debris covers majority of these surfaces and will require cleaning after other obstructions are removed.

Response to Question 7

Cannot be determined in present state with obstructions present.

L. Shamenek Notified of items 3,4,5 & 7.

Survey Unit Inspector (print/sign)	R. Shepherd /	Date	4/26/05
Survey Designer (print/sign)	W. Cooper /	Date	4/28/05

Attachment 9-1
8900-05-015

EXHIBIT 3

Surface Measurement Test Area (SMTA) Data Sheet

ORIGINAL

SECTION 1 - DESCRIPTION

SMTA Number	SMTA - SS 1-1	Survey Unit Number	OL-1 DSB Conc. West
SMTA Location	DSB PAD West @ intersection of Floor & Ramp		
Survey Unit Inspector	Shepherd	Date: 4-21-05	Time: 0945

SECTION 2 - CALIPER INFORMATION & PERSONNEL INVOLVED

Caliper Manufacturer	Mitutoyo	Caliper Model Number	CD-6" CS
Caliper Serial Number	0763893	Calibration Due Date (as applicable)	N/A
Rad Con Technician	Brownsberger	Date: 4-21-05	Time: 0925
Survey Unit Inspector Approval	[signature]	Date	4-21-05

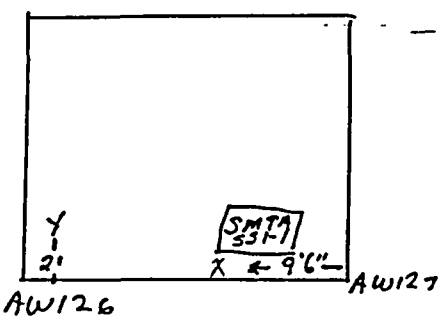
SECTION 3 - MEASUREMENT RESULTS

SMTA Grid Map & Measurement Results in Units of mm (Insert Results in White Blocks Below)

1: .1	7: 9.8	13: 5.5	19: 6.7	25: 10.9	31: 5.2
2: 26	8: 9.3	14: 10.4	20: 12.2	26: 16.9	32: 13.9
3: 22.6	9: 7.7	15: 10.8	21: 11.9	27: 11.1	33: 14.3
4: 3.5	10: 11	16: 9.2	22: 10.2	28: 14.8	34: 15.1
5: 2.8	11: 6.5	17: 10.4	23: 10.2	29: 16.9	35: 5.1
6: 1.6	12: 10.6	18: 5.6	24: 21.8	30: 12.8	36: 14.11

Average Measurement 10.76 mm

Comments



Survey Area Surfaces will require cleaning prior to FSS Surveys.

Additional Measurements Required

Attachment 9-2
E900-05-015

EXHIBIT 3

Surface Measurement Test Area (SMTA) Data Sheet

ORIGINAL

SECTION 1 - DESCRIPTION

SMTA Number	SMTA - SS-1-2	Survey Unit Number	OL-1 DSB North Concrete
SMTA Location	DSB PAD North Edge TOP Surface AND Vert. FACE		
Survey Unit Inspector	Shepherd	Date: 4-21-05	Time: 0900

SECTION 2 - CALIPER INFORMATION & PERSONNEL INVOLVED

Caliper Manufacturer	Mitutoyo	Caliper Model Number	CD-6"CS
Caliper Serial Number	0763893	Calibration Due Date (as applicable)	N/A
Rad Con Technician	Brownsberger	Date: 4-21-05	Time: 0800
Survey Unit Inspector Approval	[signature]	Date	4-21-05

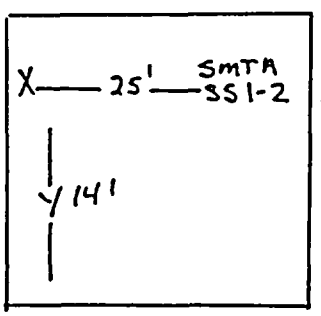
SECTION 3 - MEASUREMENT RESULTS

SMTA Grid Map & Measurement Results in Units of mm
(Insert Results in White Blocks Below)

1: 1.75	7: 2.7	13: 1.0	19: 1.1	25: 1.4	31: 1.6
2: .95	8: 1.0	14: 1.6 (2nd Meas.)	20: 1.1	26: 1.5	32: 1.6
3: 1.5	9: .5	15: 1.8	21: .8	27: 2.1	33: 1.7
4: 1.8	10: 1.7	16: 2.1	22: 1.1	28: 1.1	34: 1.5
5: 2.6	11: 3.5	17: 8.2	23: 6.7	29: 15.5	35: 12.6
6: 8.5	12: 7.5	18: 6.2	24: 7.9	30: 8.8	36: 15.3

Average Measurement 3.84 mm

Comments



Survey Surfaces will Require Cleaning prior to FSS Surveys.

Additional Measurements Required

Attachment 9-3
E900-05-015

EXHIBIT 3

Surface Measurement Test Area (SMTA) Data Sheet

ORIGINAL

SECTION 1 - DESCRIPTION

SMTA Number	SMTA - SS-1-3	Survey Unit Number	OL-1 SSGS Concrete
SMTA Location	N.W. Corner SSGS PAD		
Survey Unit Inspector	Shepherd	Date: 4-21-05	Time: 1000

SECTION 2 - CALIPER INFORMATION & PERSONNEL INVOLVED

Caliper Manufacturer	Mitutoyo	Caliper Model Number	CD-6"-CS
Caliper Serial Number	0763893	Calibration Due Date (as applicable)	N/A
Rad Con Technician	Brownsberger	Date: 4-21-05	Time: 0945
Survey Unit Inspector Approval	[signature]	Date	4-21-05

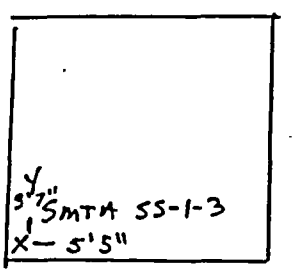
SECTION 3 - MEASUREMENT RESULTS

SMTA Grid Map & Measurement Results in Units of mm
(Insert Results in White Blocks Below)

1: 2.6	7: 2.5	13: 5.9	19: 4.3	25: 1.6	31: .6
2: .7	8: 1.2	14: 2.2	20: 11.3	26: .7	32: .8
3: 1.2	9: .7	15: 2.3	21: 5.2	27: .5	33: 3.3
4: .3	10: 1.2	16: 3.9	22: 5.3	28: .3	34: .6
5: 1.4	11: 10.8	17: 2.3	23: 6.7	29: 1.1	35: .2
6: 3.6	12: 4.6	18: 2.5	24: 12.5	30: .3	36: .6

Average Measurement 2.94 mm

Comments



A4132

Survey Area Surfaces will require cleaning PRIOR TO FSS Surveys.

Additional Measurements Required

Attachment 4-4
E900-05-015

EXHIBIT 3

ORIGINAL

Surface Measurement Test Area (SMTA) Data Sheet

SECTION 1 - DESCRIPTION

SMTA Number	SMTA - SS1-4	Survey Unit Number	OL-1 Boiler PAD Conc.
SMTA Location	SS 6 S Boiler PAD Area		
Survey Unit Inspector	Shepherd	Date: 4-21-05	Time: 1030

SECTION 2 - CALIPER INFORMATION & PERSONNEL INVOLVED

Caliper Manufacturer	Mitutoyo	Caliper Model Number	CD-6"-CS
Caliper Serial Number	0763893	Calibration Due Date (as applicable)	N/A
Rad Con Technician	Brownsberger	Date: 4-21-05	Time: 1000
Survey Unit Inspector Approval	[signature]	Date	4-21-05

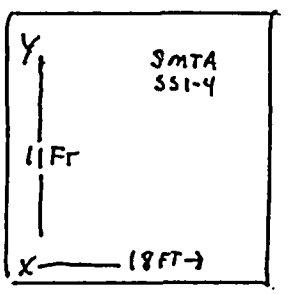
SECTION 3 - MEASUREMENT RESULTS

SMTA Grid Map & Measurement Results in Units of mm (Insert Results in White Blocks Below)

1: 5.4	7: 3.3	13: 17.1	19: 8.8	25: 2.9	31: 4.6
2: 2.7	8: 3.4	14: 3.3	20: 1.7	26: 6.0	32: 4.5
3: 3.7	9: 7.6	15: 4.1	21: 10.7	27: 16.3	33: 3.3
4: 3.1	10: 3.4	16: 2.4	22: 1.3	28: 17.2	34: 15.7
5: 2.7	11: 3.6	17: 1.9	23: 9.2	29: 4.5	35: 4.2
6: 2.13	12: 2.1	18: 1.1	24: 4.0	30: 2.4	36: 5.4

Average Measurement 5.44 mm

Comments



AT132

AREAS Represented by This SMTA will need surfaces cleaned before Surveys Are done

Additional Measurements Required

Attachment 9-65 24
E900-05-015

1. Purpose

This procedure details the requirements for performing a position calibration of a PSPC detector array.

2. Scope and Limitations

This procedure applies to version 2.0 or later of the Surface Contamination Monitor process software.

3. Definitions and Acronyms

Table 1. Definitions and Acronyms.

ITEM	DESCRIPTION
SCM	The Surface Contamination Monitor is a mobile platform containing detectors, support electronics, and data logger used for conducting radiological surveys.
SIMS	Survey Information Management System – SIMS is flexible and comprehensive interfacing software for the SRA SCM. SIMS processes the SCM instrument data with a sophisticated data parser, integrated spreadsheet, and powerful special functions such as spatial data filters. SIMS provides the most flexible reporting system available for printing survey records or complete stand-alone survey reports. SIMS contains all the tools needed to meaningfully communicate between the SCM and the data analysis team.
PSPC	Position Sensitive Proportional Counter – This is a radiation detector that is capable of establishing where along the detector a pulse is sensed (the system is described in NUREG/CR-6450). The detectors are similar in efficiency to other counters, but have backgrounds associated with small area detectors (5cm x 5cm). This results in improved sensitivity, due to low background, and specific identification of the location of the radioactivity. The manufacturer of PSPCs makes them in any length.
Peak Edge	The channel that is halfway between the maximum and minimum of the peak on the side of the peak facing the nearest MHV connector.

4. General Information

The design of the SCM acquisition system allows several detector configurations. To this end, the acquisition engine and software provides for adjustments to allow for the differences between the attributes of the different detector configurations. The most important of these adjustments is the position calibration.