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SMO-481/06
August 9, 2006

Mr. Don Pfister, Director
Miamisburg Closure Project
U. S. Department of Energy
175 Tri-County Parkway
Springdale, OH 45246

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152: Deliverable #36 Building Data Package; Section C.2.1.2 Facility Transfer; Final Status Report T Building Survey Units # SYS-02A, SYS-02B, and SYS-02C, Final

Dear Mr. Pfister:

Attached is the following Final document for your records:

- Final Status Report, T Building Survey Units # SYS-02A, SYS-02B, and SYS-02C, Final

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Dave Rakel at 937-865-4203.

Sincerely,

Michael D. Ebben
Site Manager

ME/jg

Enclosures

- cc: T. Fischer, USEPA, (1) w/attachments
- B. Nickel, OEPA, (1) w/attachments
- S. Helmer, ODH, (1) w/attachments
- J. Crombie, ODH, (1) w/attachments
- M. Wojciechowski, Tetra Tech, (1) w/attachs
- G. Gorsuch, DOE/MCP, (1) w/attachments
- G. Desai, DOE/HQ, (1) w/attachments
- ER Records, CH2M Hill, (1) w/attachments
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- M. Ebben, CH2M Hill, w/o attachments
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Final Status Survey Report – Final
T Building
Survey Unit # (s) SYS-02A, SYS-02B, and SYS-02C

Prepared by:	Mary Sizemore / <i>Mary Sizemore</i>	Date:	7-27-06
Reviewed by:	Robert Coblenz / <i>R. Coblenz</i>	Date:	7-28-06
Approved by:	Ken Armstrong / <i>K. Armstrong</i>	Date:	7-28-06

T Building & PRSs 213-233, & 339-344

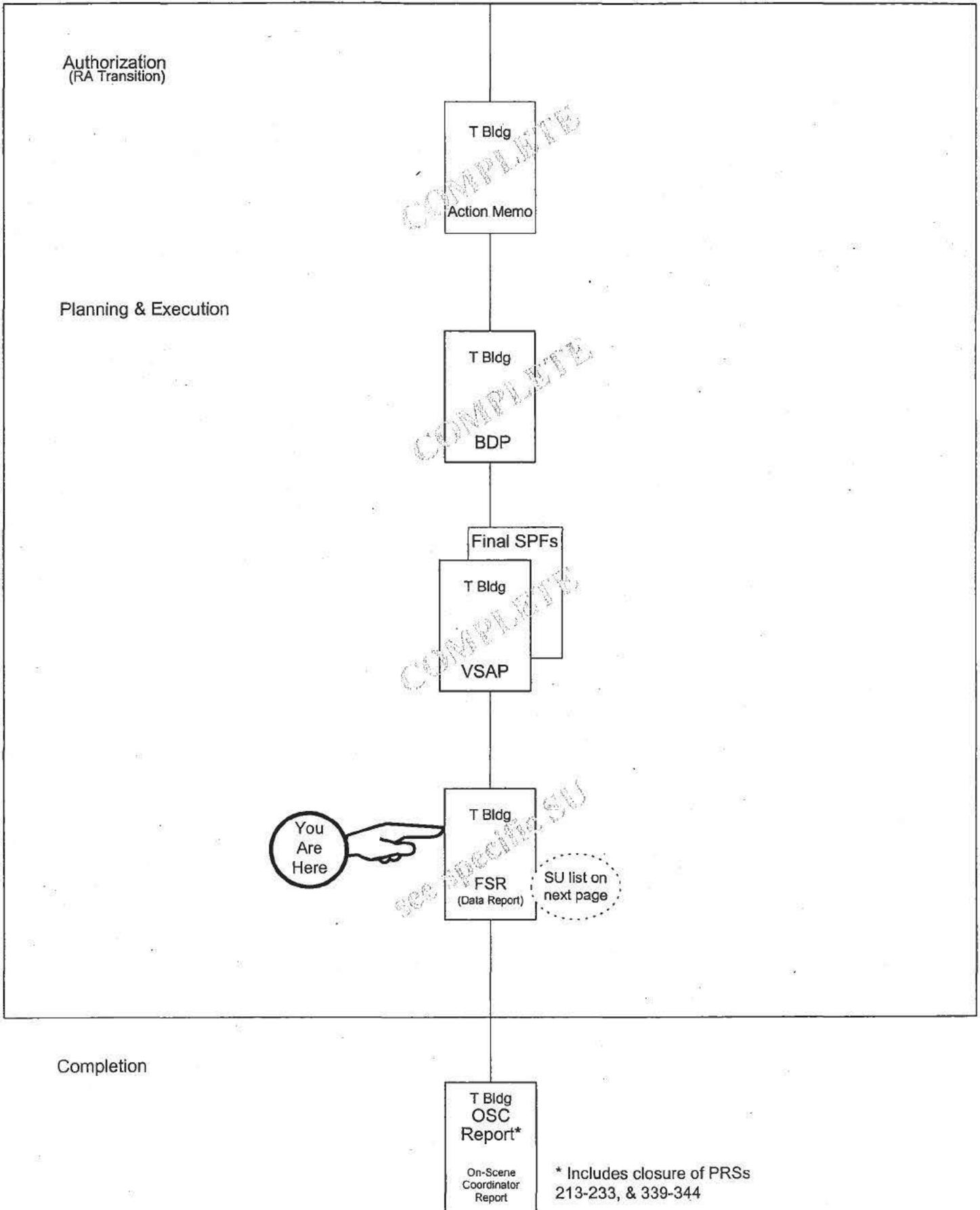


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- Attachment A – T Building Contaminants of Concern and Surface Release Criteria
- Attachment B – Direct and Removable Activity Graphs
- Attachment C - Retrospective Power Curves
- Attachment D - Data Analysis Worksheets
- Attachment E - Survey Plan Form T-01 and T-11
- Attachment F - Summary of Attached Radiological Survey Data Sheets

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1.0 Historical Overview

T Building is a heavily reinforced subterranean concrete structure. Construction was completed in 1948. The two main floors are compartmentalized into three general areas (bays) by two 30-inch thick reinforced concrete firewalls. T Building contains more than 200 rooms and 20 corridors. The Core Team authorized the Removal Action via the T Building Action Memorandum (Reference 1) due to radiological contamination from various missions and projects in the building. A complete list of contaminants of concern (COCs) is provided in Attachment A.

Associated building structures include two exhaust airshafts, which each historically were attached to a two-hundred-foot tall brick and mortar exhaust stack. The exhaust stacks have been demolished. The building has three towers along the north wall, one at each end and one at the center. The end towers contain stairways, passenger elevators, airshafts for intake ventilation air, and pedestrian entrances at grade level. The middle tower was used for providing intake ventilation air.

T Building was designed with interstitial spaces above the two primary floors (1st and 2nd). These interstitial spaces are referred to as "Crawlspace".

1.1 Survey Unit Overview

SYS-02A and SYS-02B (utility chase from brick wall of Room 99 to West Headhouse), and SYS-02C (West Headhouse) are part of the building exhaust air system. SYS-02 originally classified as Class 2 survey unit was broken down into four survey units SYS-02A, SYS-02B, and SYS-02C, and SYS-02E. This report includes SYS-02A, SYS-02B, and SYS-02C. These survey units were surveyed in accordance with the Survey Plan Form (SPF) T-01 used for Class 1 Survey Units.

The floor areas in Survey Units SYS-02A, SYS-02B, and SYS-02C have residual volumetric floor contamination. These rooms and the sump were used for polonium processing during the 1950's and 1960's. In the early 1970's, the area was decommissioned and decontaminated to the extent that was practical. The levels of contamination have been reduced significantly on all rooms except where, residual bulk contamination remains in the floor. The major contaminants of concern (COCs) are Am-241, Pu-238, and Th-230.

Survey unit classifications are based on historical records, a survey report entitled Mound Site Radionuclides by Location (Reference 2), the T Building White Paper (Reference 3), interviews with past and present building managers, and previous and past radiological data. A table listing contaminants of concern is given in Attachment A.

The surfaces were free of dirt, insulation, and loose paint at the time of survey. The areas were completely emptied prior to final status survey, and access was restricted. This Final Status Survey Report (FSSR) documents completion of the survey and evaluation of the survey data.

2.0 Survey Objectives

The objective of the T Building Verification Sampling and Analysis Plan (VSAP) (Reference 4) was to determine whether or not the residual radioactivity on the building surfaces in T Building meets the surface release criteria. This was to be accomplished by measuring the fixed and removable contamination on building surfaces and systems. Residual radioactivity levels were evaluated versus established release criteria provided in the Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach, Appendix A Surface and Volumetric Release Criteria for Building Disposition (hereafter referred to as 'Mound 2000', Reference 5). The survey data were compared to the release criteria of Mound 2000, using methods defined in Reference 6. The surface release criteria stated as the allowable total residual surface contamination in the Mound 2000 are the Derived Concentration Guidelines (DCGL's) for building release. The specific survey objectives were outlined on the Survey Plan Forms (SPFs) located in Attachment E.

The T Building VSAP does not specifically address treatment of volumetric contamination, since volumetric contamination was not anticipated to be present to the extent that has now been discovered. A licensed civil engineer from an approved engineering company, LBJ, has determined that further removal of the existing volumetric contamination could weaken the building structure. Treatment of volumetric contamination is addressed in Mound 2000, where radiation doses to future building occupants are restricted to the established dose limit of 15 mrem/yr, excluding naturally occurring radioactive materials (NORM). The RESRAD-Build (Reference 9) computer code has been used to compute the maximum potential doses to future building occupants using both the Building Occupancy model and the Building Renovation model as described in Appendix A of Mound 2000 (Reference 5). Potential doses have been computed based on the data collected from the verification survey and from additional volumetric sampling. The specific survey objectives were outlined on the Survey Plan Forms (T-01 and T-11) located in Attachment E.

2.1 Survey Design

The Type I error denoted by alpha (α) was set at 0.05 and the Type II error denoted by beta (β) was set at 0.01. The number of data points was determined by calculating the relative shift, denoted by delta/sigma (Δ/σ), from the Derived Concentration Guideline Limit (DCGL) value, the lower bound of the gray region (LBGR), and the standard deviation denoted by sigma (σ) of the contaminant in the survey unit ($\Delta/\sigma = \text{DCGL-LBGR}/\sigma$). For this survey plan, the LBGR was set at 50% of the DCGL_w (average concentration over a wide area). The standard deviation was determined to be 17-dpm/100cm² based on previous surveys and the relative shift was calculated was 2.94. The required number of data points ($N = 20$) per survey unit was obtained from Table 5.5 Reference 6.

The SU sample locations within T Building were named based on which floor elevation and bay they occupied. The designated SUs on each floor were sub-categorized into 'north', 'central', and 'south' areas, corresponding to the three bays split by the firewalls within the building. The general naming convention follows: XY-ZZ-#

where:	X	=	building floor elevation
	Y	=	bay
	ZZ	=	SU number
	#	=	floor/lower wall (1) or upper wall/ceiling (2) designator

followed by a letter designator

D	=	Drain
V	=	Vent
U	=	Utility
J	=	Judgmental
S	=	Static

For example:

1C-01-1S =	1 st floor, center bay, SU# 1, floor & lower wall survey unit, static
2N-05-2V =	2 nd floor, north bay, SU# 5, upper wall & ceiling survey unit, vent

The numerical indices restart in each bay of each floor.

Systems within T Building were named based on the PRS number associated with them or were assigned a unique ID number. Examples are: SYS-PRS 215 (for PRS 215) and SYS-10 (Breathing Air System).

Statistical survey data point locations were selected within the survey unit using a triangular grid pattern with a randomly selected starting point. The Visual Sample Plan (VSP) computer program (Reference 7) was used for this purpose. (For any areas designated as Class 3, only judgmental survey data point locations are required.)

Professional judgment (biased) surveys were performed to supplement the statistical survey data, but were not combined with the statistical data. Judgmental survey data were compared directly to the release criteria.

Statistical volumetric samples locations were selected on the floor within the survey unit using a triangular grid pattern with a randomly selected starting point. The Visual Sample Plan (VSP) computer program (Reference 7) was used for this purpose. Judgmental locations were selected at elevated measurements on the floor and composited with the statistical volumetric samples locations to ensure the maximum amount of volumetric contamination was collected. Different depths of core drilling were conducted to determine the extent of contamination.

2.2 Survey Data

The gross alpha and beta fixed-point measurements were compared to their respective guideline values. Graphical representations of the average and maximum direct and removable activity for alpha, beta, and tritium are shown in Attachment B. Retrospective power curves for direct and removable activity measurements provided in Attachment C show that the survey design had sufficient power (probability) to meet DQO's for this survey plan.

Direct alpha and beta scans were performed on 100% of the floors. Walls and ceilings were scanned in accordance with the SPF (Attachment E).

Direct alpha and beta measurements and smears were taken on outside surfaces of drainpipes, HVAC ductwork, and utility piping if they were present.

The instruments selected for this survey were gas flow proportional detectors. Alpha/beta fixed point measurements were made using the Ludlum 2350-1 data logger with a 43-68 hand-held probe. This instrument was also used for scanning. The scanning instruments were set to alarm at 75% of the applicable guideline values, DCGL_{EMC}, (elevated measurement comparison) for the most restrictive alpha emitter and most difficult to detect beta emitter. Instrument calibration and source check data were documented in accordance with Mound procedures.

Loose surface contamination was measured by smearing an area of 100 cm² at each data point. Smears were counted for gross alpha/beta activity. Removable tritium contamination was measured by liquid scintillation counting of the smears. Smear results were not combined with the statistical data but compared directly to the removable surface release criteria.

General area exposure rate measurements were performed using a Micro Rem meter to ensure that the average level of gamma radiation did not exceed the background level by more than 20 micro-R/hr.

Volumetric samples were collected at both statistical survey data point locations and at elevated judgmental locations on the floor in accordance with SPF T-11 (Attachment E). Core samples were collected from drilling 1" holes in the concrete floor and combining them into one composite sample to determine the average volumetric concentration for use in the RESRAD-Build dose models. Core samples were collected from drilling 1" holes from the surface to 15 cm.

Survey data was documented on the Radiological Survey Data Sheets (RSDS) provided in Attachment F. The RSDS maps are not engineered drawings and may not be to scale. These maps were used for general information purposes only. The dxf. file maps that were imported into VSP were engineered drawings.

Due to the presence of residual volumetric contamination in the floor in this survey unit, the RESRAD-Build computer code (Reference 9) was used to assess potential radiation dose to future building occupants. Both random and biased sample data were collected. Doses were computed using both the building occupancy scenario (office worker) and the building renovation scenario, as required in Mound 2000.

The building occupancy scenario was used to evaluate potential radiation dose to future office worker personnel that might reside in one of the rooms where residual bulk contamination is present. In this scenario, the office worker was positioned in the center of the room at a distance of 1 meter above the source (contaminated concrete floor). The exposure duration was set to 1 year, per NUREG/CR-5512 PNL-7994, Vol. 1, Residual Radioactive Contamination from Decommissioning, Technical Basis for Translating Contamination Levels to Annual Total Dose Equivalent, Final Report (Reference 10). The input parameters and assumptions used in the RESRAD-Build computer model were reviewed and concurred upon by the regulators and are provided in Attachment D, along with a computer printout of the results.

The building renovation scenario was used to evaluate potential dose to a construction worker involved in some future building renovation. In this scenario, the source

(contaminated concrete floor) was disturbed such that the worker is exposed to airborne radioactivity. The exposure duration in this scenario was only 6 months, per NUREG/CR-5512 (Reference 10). The computed dose under this scenario represents the maximum annual dose to a construction worker. The input parameters and assumptions used in the RESRAD-Build computer model were reviewed and concurred upon by the regulators and are provided in Attachment D, along with a computer printout of the results. The calculated dose is for floor areas only and does not include the dose contribution from surrounding areas or sources. The dose contribution from surrounding areas or sources is provided in Attachment D.

2.3 Quality Control

Quality Control (QC) measurements will be taken in accordance with Mound procedures (Reference 8) and results evaluated and documented in the T Building Final Status Survey Report.

2.4 Conclusion

The objective of the VSAP was to determine whether or not the residual radioactivity of the surfaces of building materials associated with T Building satisfy the surface release criteria established by Mound 2000 (Reference 5) and documented in the T Building VSAP (Reference 4). This is accomplished by comparing the survey data to the surface release criteria in accordance with MARSSIM (Reference 6). This objective has been met for the drains, vents, utilities, walls and ceilings in these survey units.

Dose to future building occupants from residual contamination on the floors in SU #s SYS-02A, SYS-02B, and SYS-02C have been shown to be less than 15 mrem/yr, in accordance with Mound 2000. The dose contribution from surrounding areas or sources is provided in Attachment D. The maximum dose to any future building occupant is less than 15 mrem/yr when considering the collective dose from all from surrounding areas or sources in T-Building.

3.0 References

1. Action Memorandum T Building Removal Action, Final CH2M Hill Mound, June 2003.
2. MD-22153, Mound Site Radionuclides by Location, March 2001.
3. CH2M Hill Mound Inc. White Paper: T Building, Structural History and Process History Summary Background Document, November 2002.
4. T Building Verification Sampling and Analysis Plan, Final, October 2004.
5. Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach, BWXT of Ohio, February 1999.
6. NUREG 1575, Rev. 1, August 2000, Multi-Agency Radiation Survey and Site Investigation Manual, (MARSSIM).
7. Visual Sample Plan, Pacific Northwest Laboratory.
8. MARSSIM Implementing Procedures, Field Quality Control for Building Contamination Surveys, MD-80046, Op. 402.
9. RESRAD-Build Computer code, Argonne National Laboratory
10. NUREG/CR-5512, PNL-7994, Vol. 1, Residual Radioactive Contamination from Decommissioning, Technical Basis for Translating Contamination Levels to Annual Total Dose Equivalent, Final Report.

Attachment A

T Building Contaminants of Concern

and

Surface Release Criteria

Attachment A

T Building Contaminants of Concern

Radionuclide	Name	Half Life	Principal Decay Emissions
H-3	Tritium	12.3 yr	β_{\max} (0.0185 MeV)
Co-60	Cobalt-60	5.3 yr	β_{\max} (0.318 MeV) γ (1.332, 1.173 MeV)
Sr/Y-90	Strontium-90 Yttrium-90	28.8 yr 2.67d	β_{\max} (0.546 MeV) β_{\max} (2.281 MeV)
Ag-108m	Silver-108m (metastable)	127 yr	γ (0.434, 0.614, 0.723 MeV)
Cs-137	Cesium-137	30.07 yr	β_{\max} (0.514 MeV) γ (0.662 MeV) from Ba-137m
Bi-207	Bismuth-207	33.7 yr	γ (0.569, 1.063 MeV)
Bi-210m	Bismuth-210m	3.0E6 yr	α (4.910, 4.949 MeV) γ (0.266, 0.305 MeV)
Po-209	Polonium-209	103 yr	α (4.866 MeV)
Ra-226	Radium-226	1599 yr	α (4.784, 4.602 MeV) γ (0.1862 MeV)
Ac-227	Actinium-227	21.7 yr	α (several from progeny) β_{\max} (0.043 MeV)
Th-230	Thorium-230	7.7E4 yr	α (4.621, 4.688 MeV)
U-234	Uranium- 234	2.47E5 yr	α (4.77, 4.72 MeV)
U-235	Uranium-235	7.04E8 yr	α (4.364, 4.396 MeV) γ (0.144, 0.184 MeV)
U-238	Uranium-238	4.47E9 yr	α (4.197, 4.147 MeV)
Pu-238	Plutonium-238	87.75 yr	α (5.456, 5.499 MeV)
Pu-239	Plutonium-239	2.41E4 yr	α (4.858 MeV)
Pu-240	Plutonium-240	6.58E3 yr	α (5.17, 5.12 MeV)
Pu-241	Plutonium-241	13.2 yr	β_{\max} (0.021 MeV)
Pu-242	Plutonium-242	3.79E5 yr	α (4.90, 4.86 MeV)
Am-241	Americium-241	432.7 yr	α (5.486, 5.443 MeV) γ (0.0595 MeV)

A_{1/2}

Attachment A

Surface Release Criteria

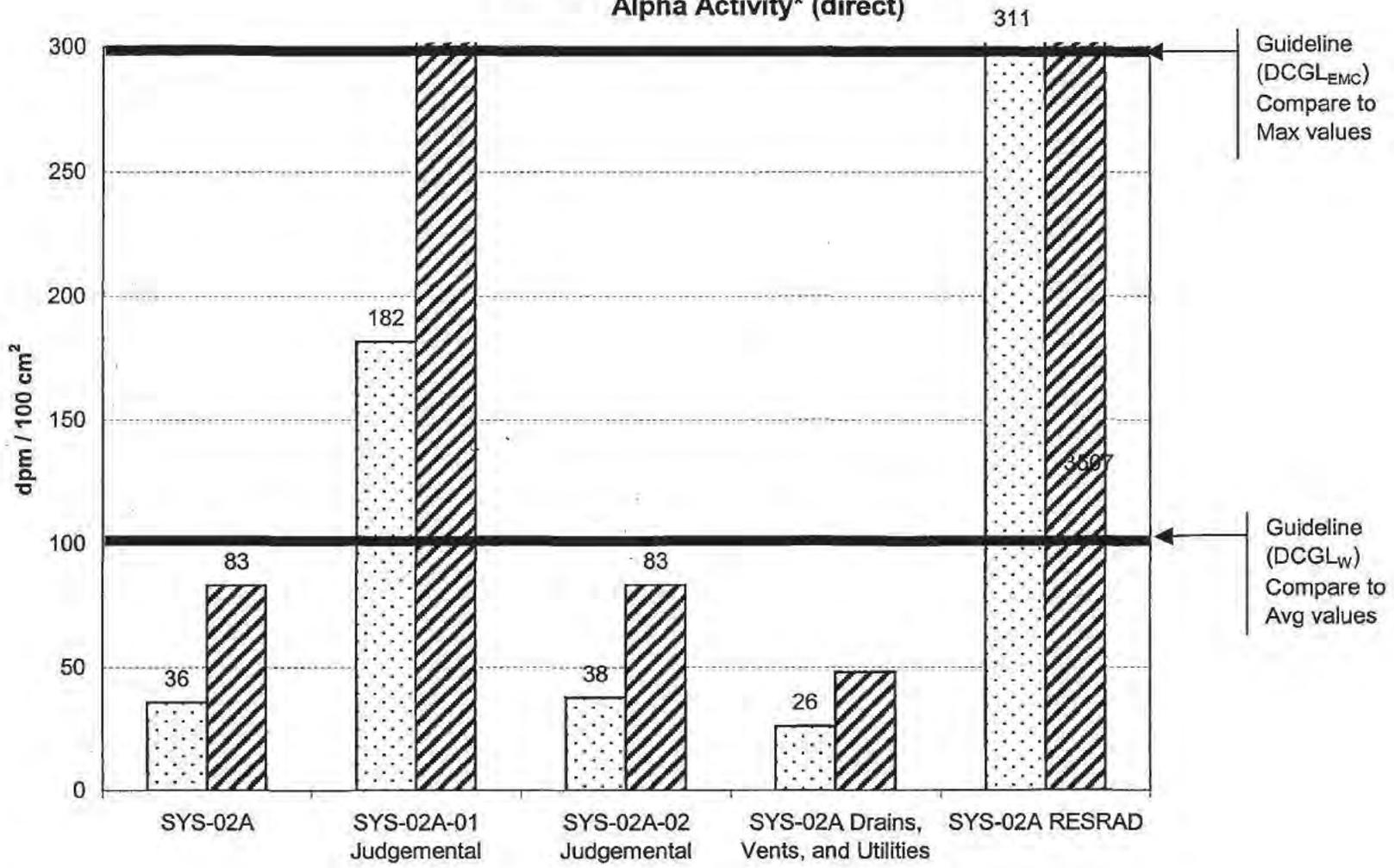
Allowable Total Residual Surface Contamination (dpm/100 cm ²) ⁽¹⁾			
Radionuclides ⁽²⁾	Average ^(3,4) (DCGL _w)	Maximum ^(5,6) (DCGL _{EMC})	Removable ⁽⁶⁾
Group 1: Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100	300	20
Group 2: Th-natural, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000	3,000	200
Group 3: U-Natural, U235, U238 and associated decay products, alpha emitters	5,000	15,000	1,000
Group 4: Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous ⁽⁷⁾ fission) except Sr-90 and others listed above. Includes mixed fission products containing Sr-90.	5,000	15,000	1,000
Tritium	N/A	N/A	10,000

Note: Refer to Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach, Table 1, "Surface Contamination Guidelines", page A-3 for specific information on surface contamination guidelines and additional notes (Reference 5).

A2/2

Attachment B
Direct and Removable Activity Graphs

Attachment B
Mound - T Building Final Status Survey
Alpha Activity* (direct)

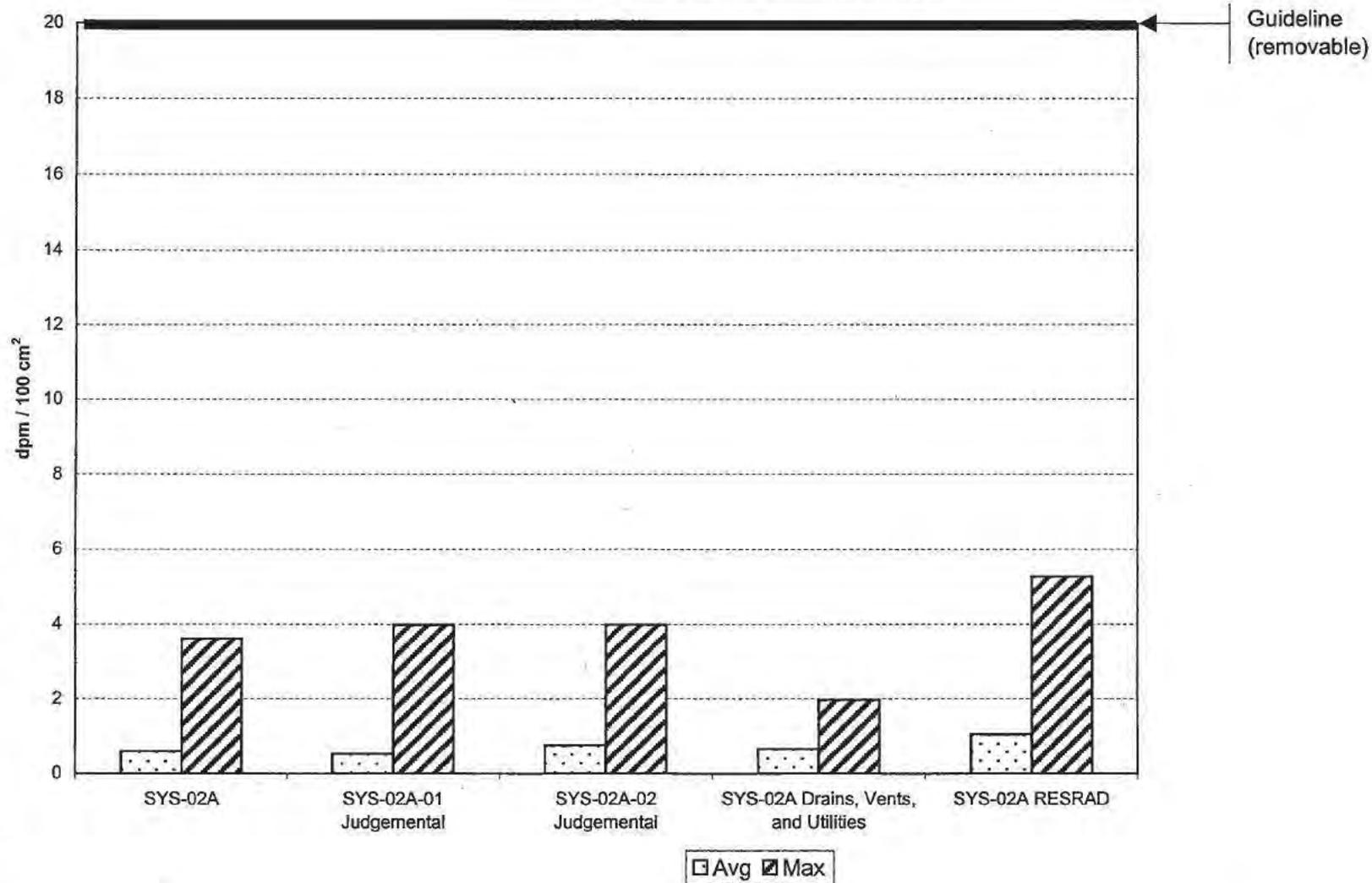


* Readings include natural background

□ Avg ▨ Max

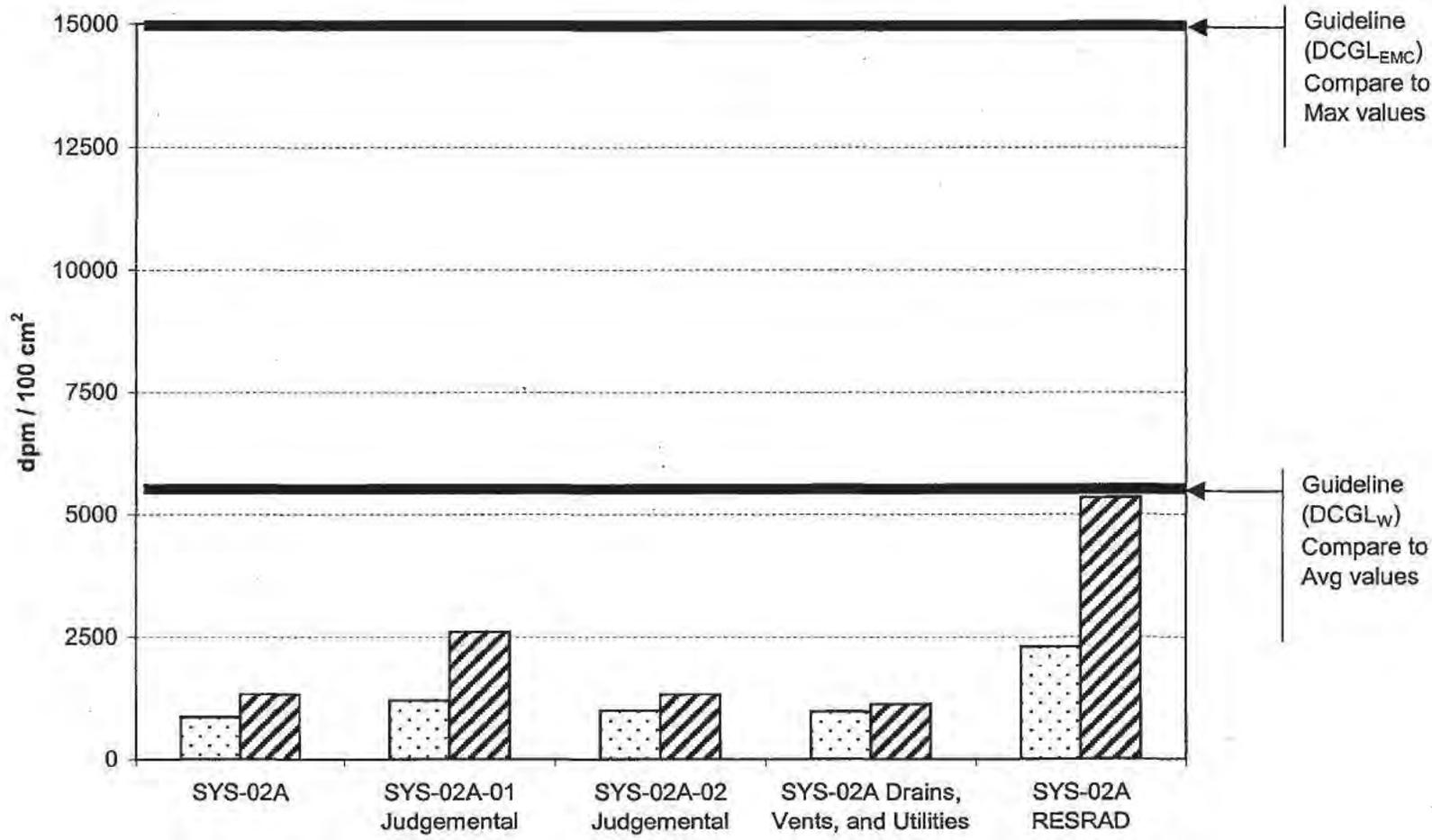
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Attachment B
Mound - T Building Final Status Survey
Alpha Activity (removable)



Ba/15

Attachment B
Mound - T Building Final Status Survey
Beta Activity* (direct)

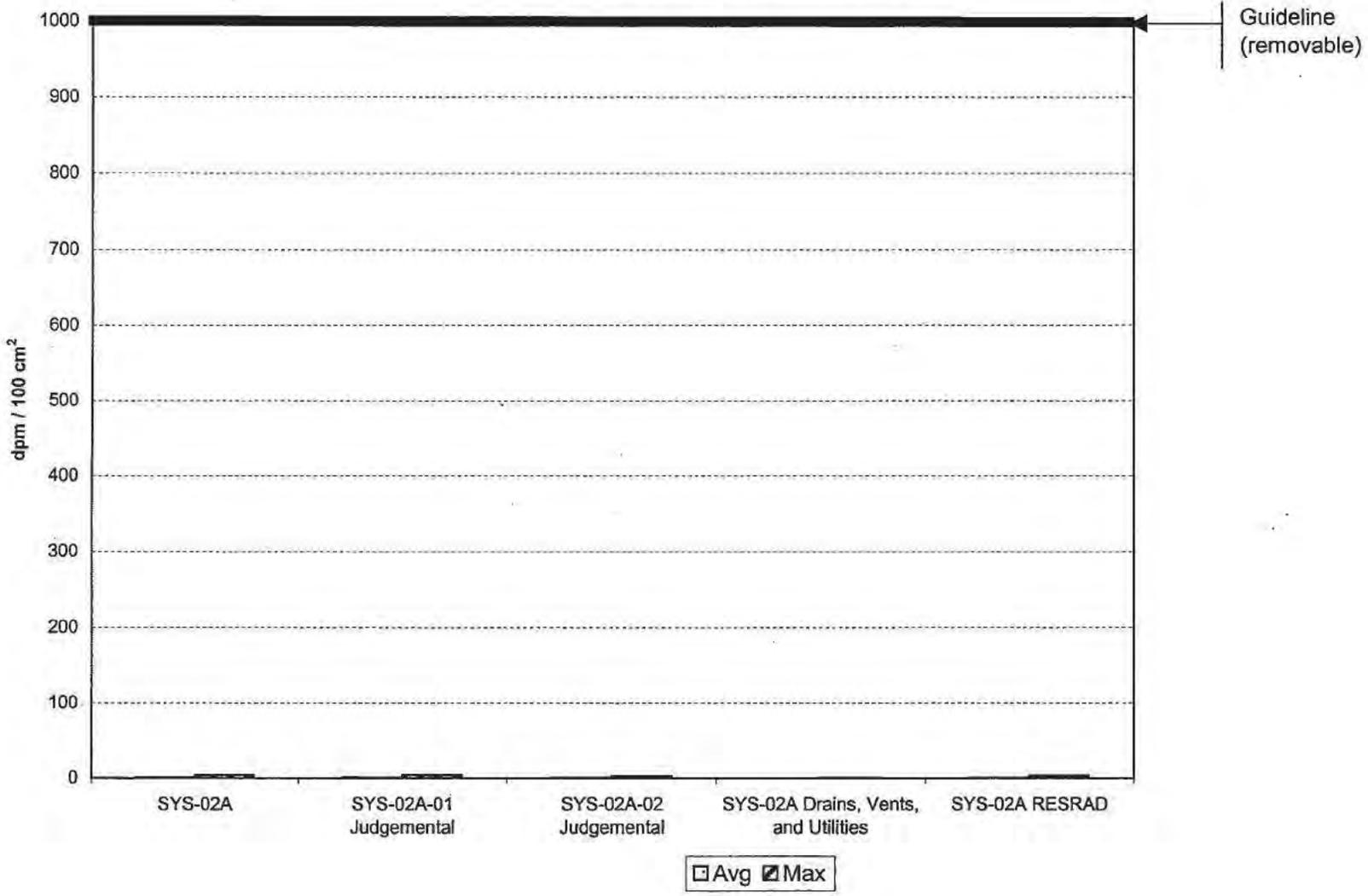


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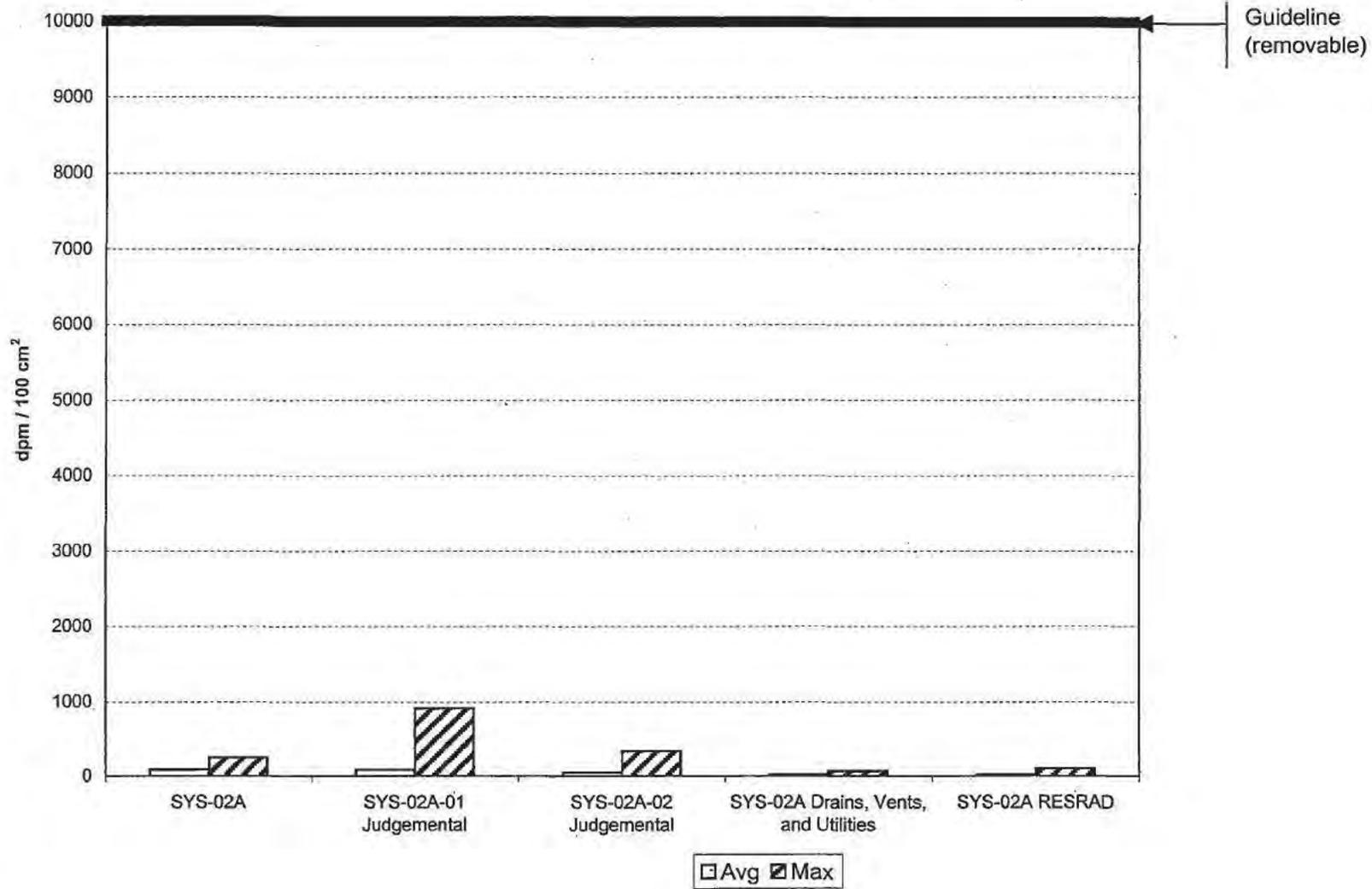
B3/S

Attachment B
Mound - T Building Final Status Survey
Beta Activity (removable)



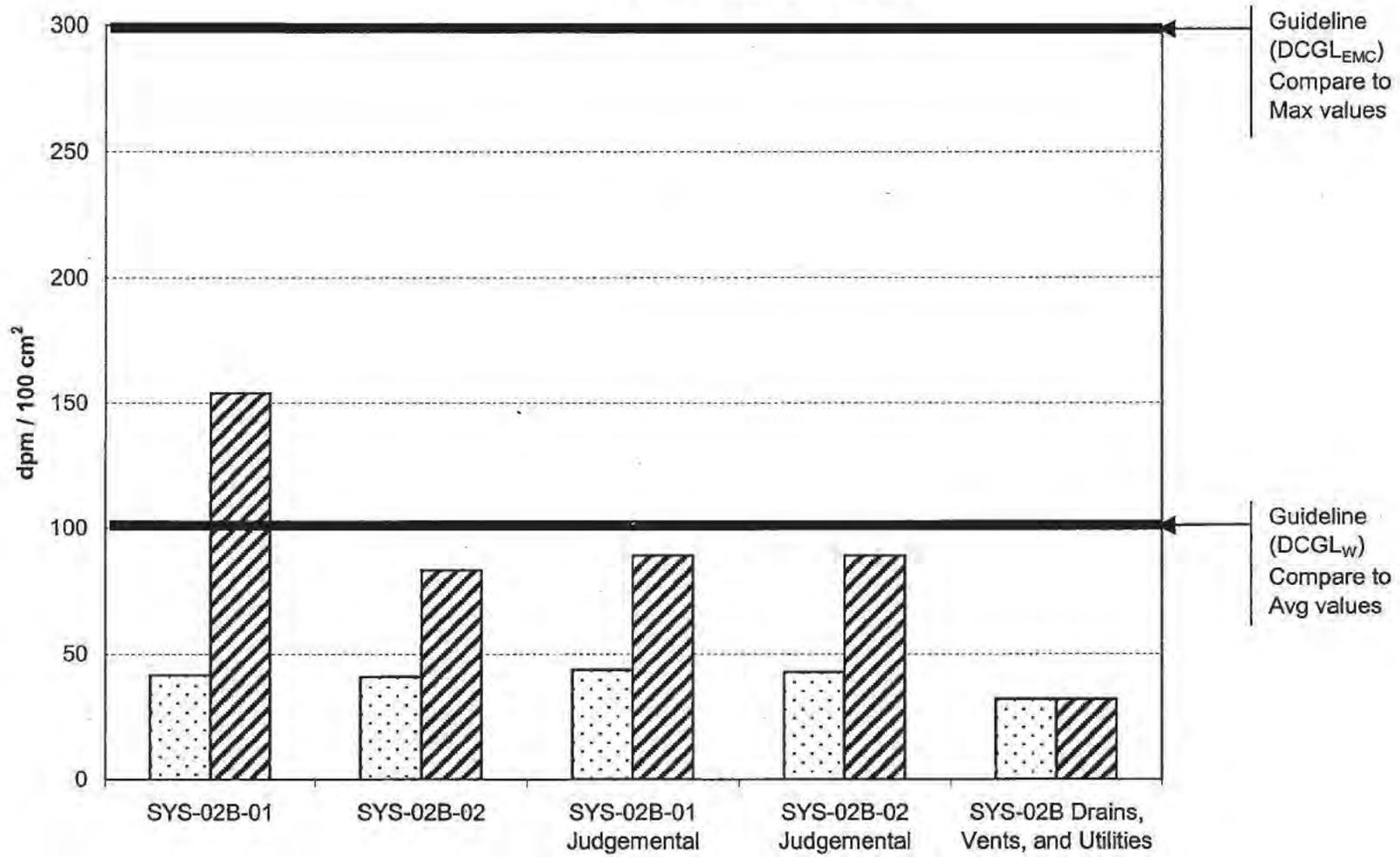
B4/15

Attachment B
Mound - T Building Final Status Survey
Tritium Activity (removable)



Bills

**Attachment B
Mound - T Building Final Status Survey
Alpha Activity* (direct)**

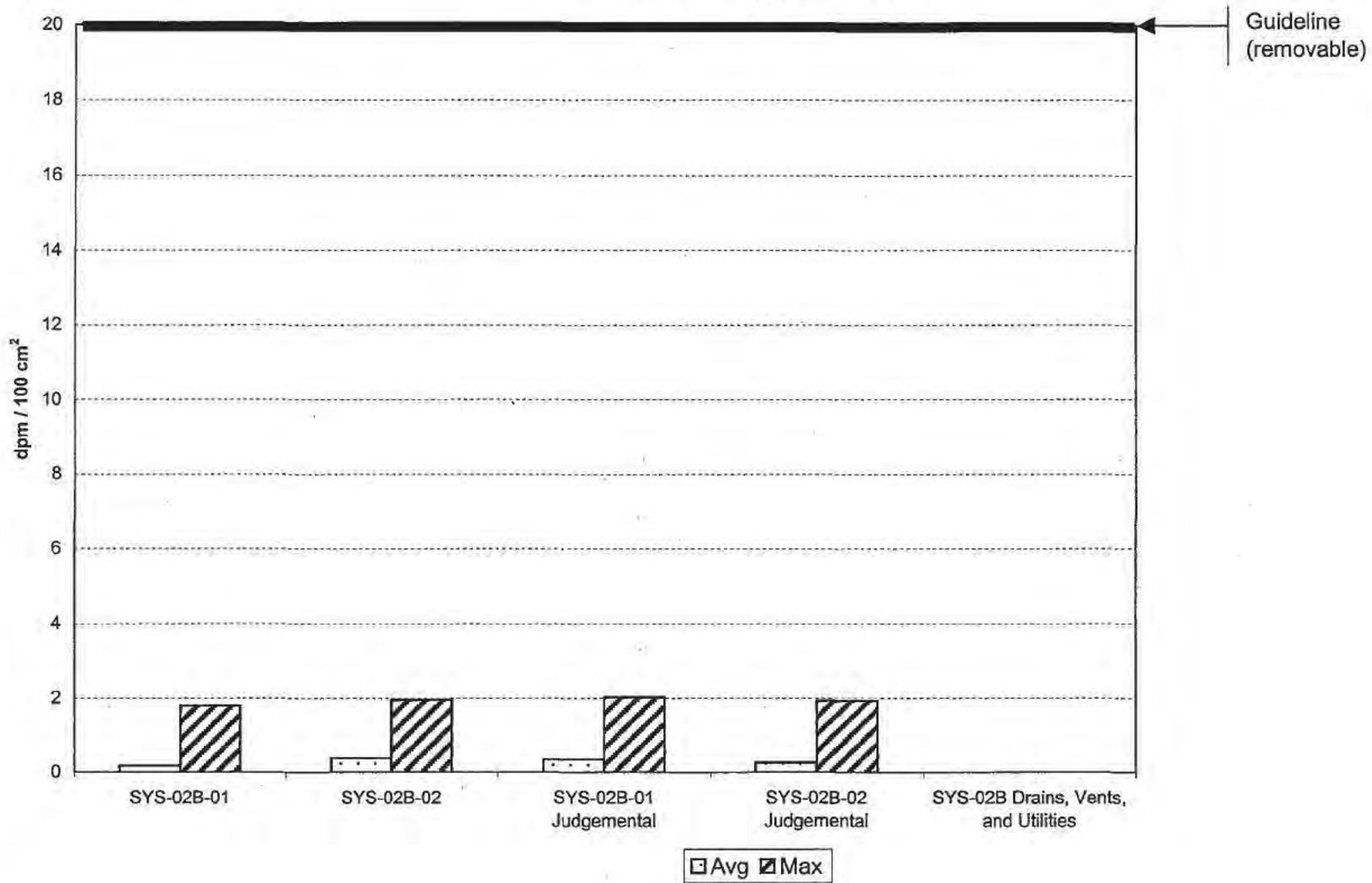


* Readings include natural background

□ Avg ■ Max

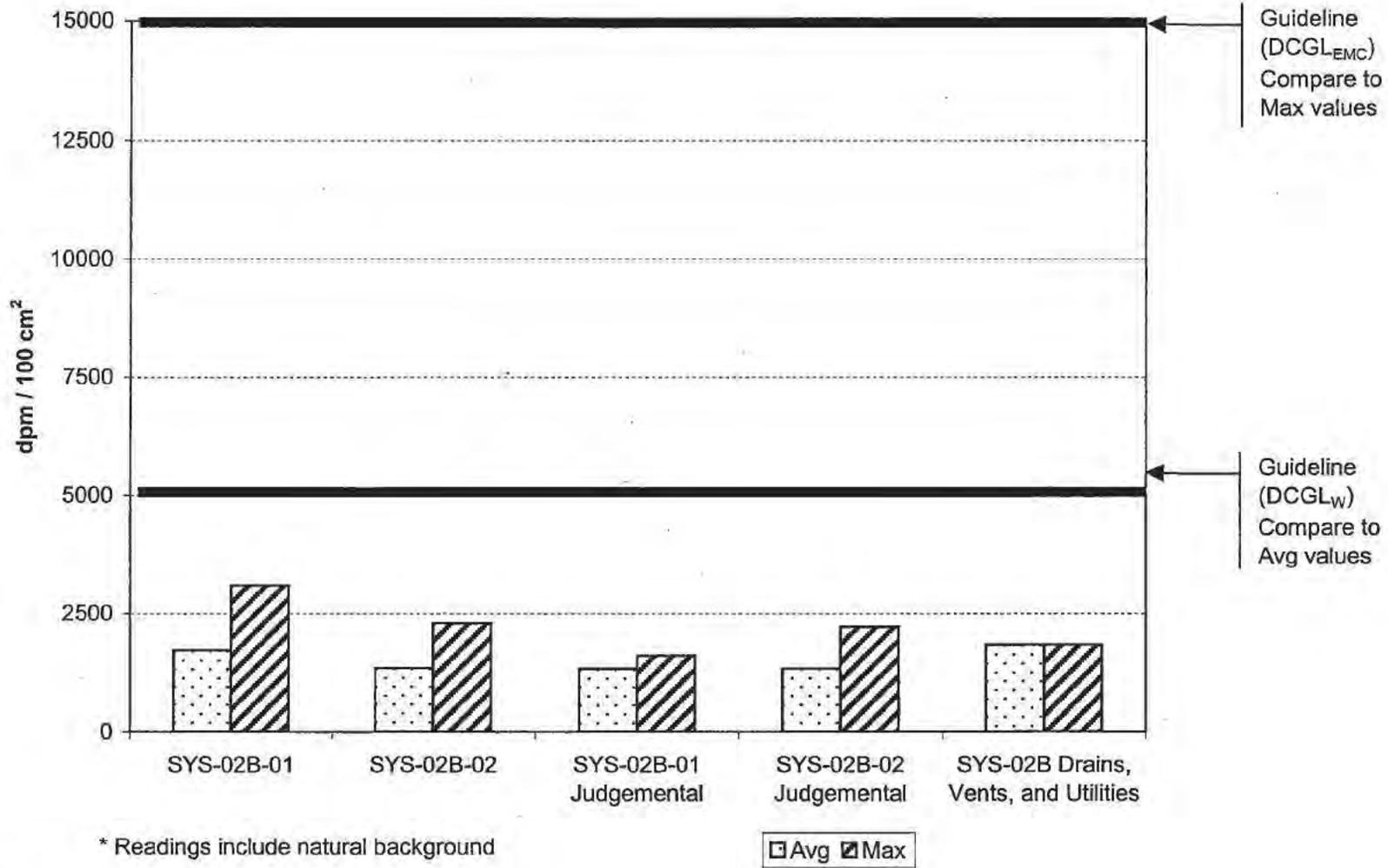
Balls

Attachment B
Mound - T Building Final Status Survey
Alpha Activity (removable)



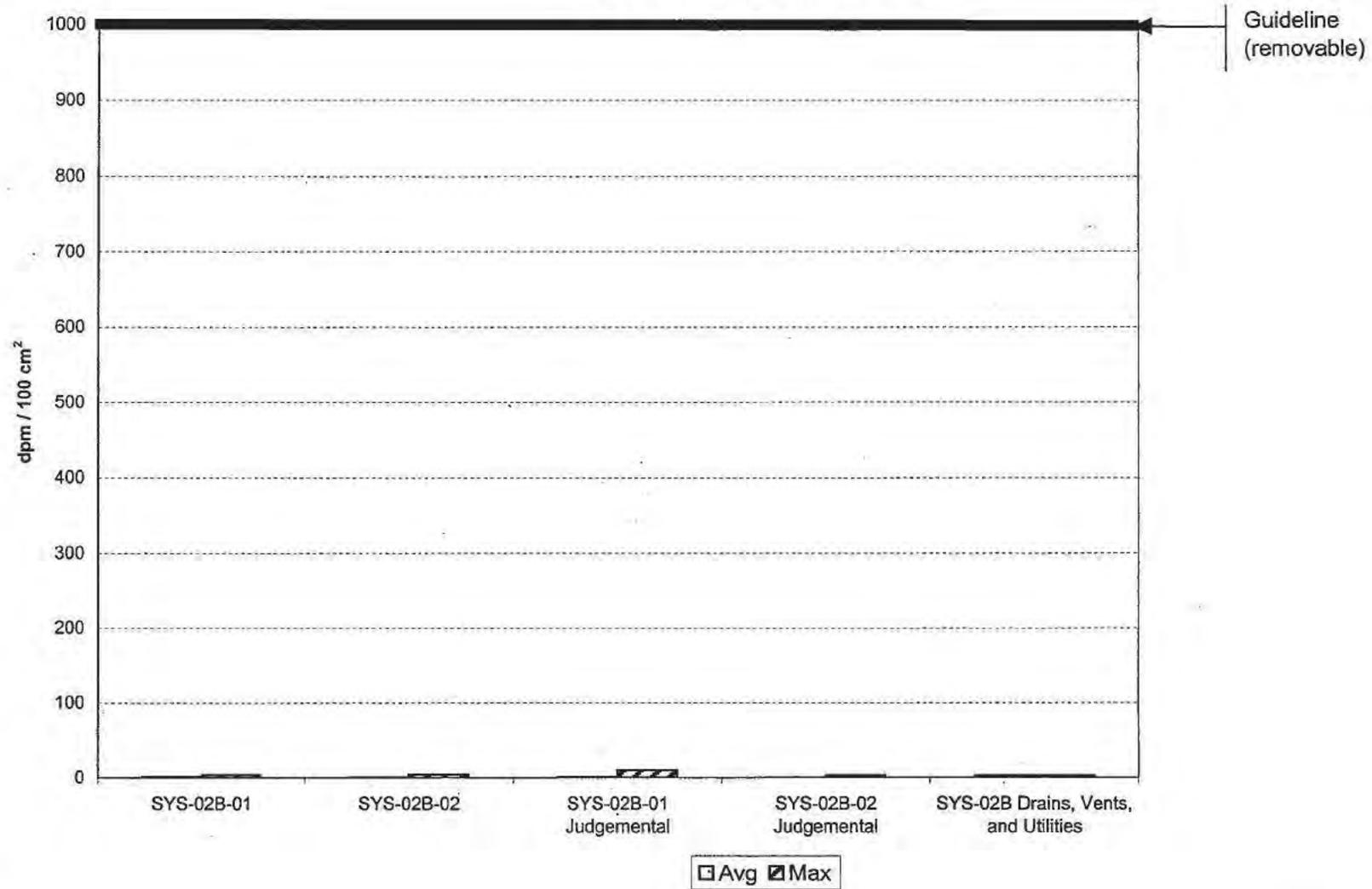
B7115

Attachment B
Mound - T Building Final Status Survey
Beta Activity* (direct)



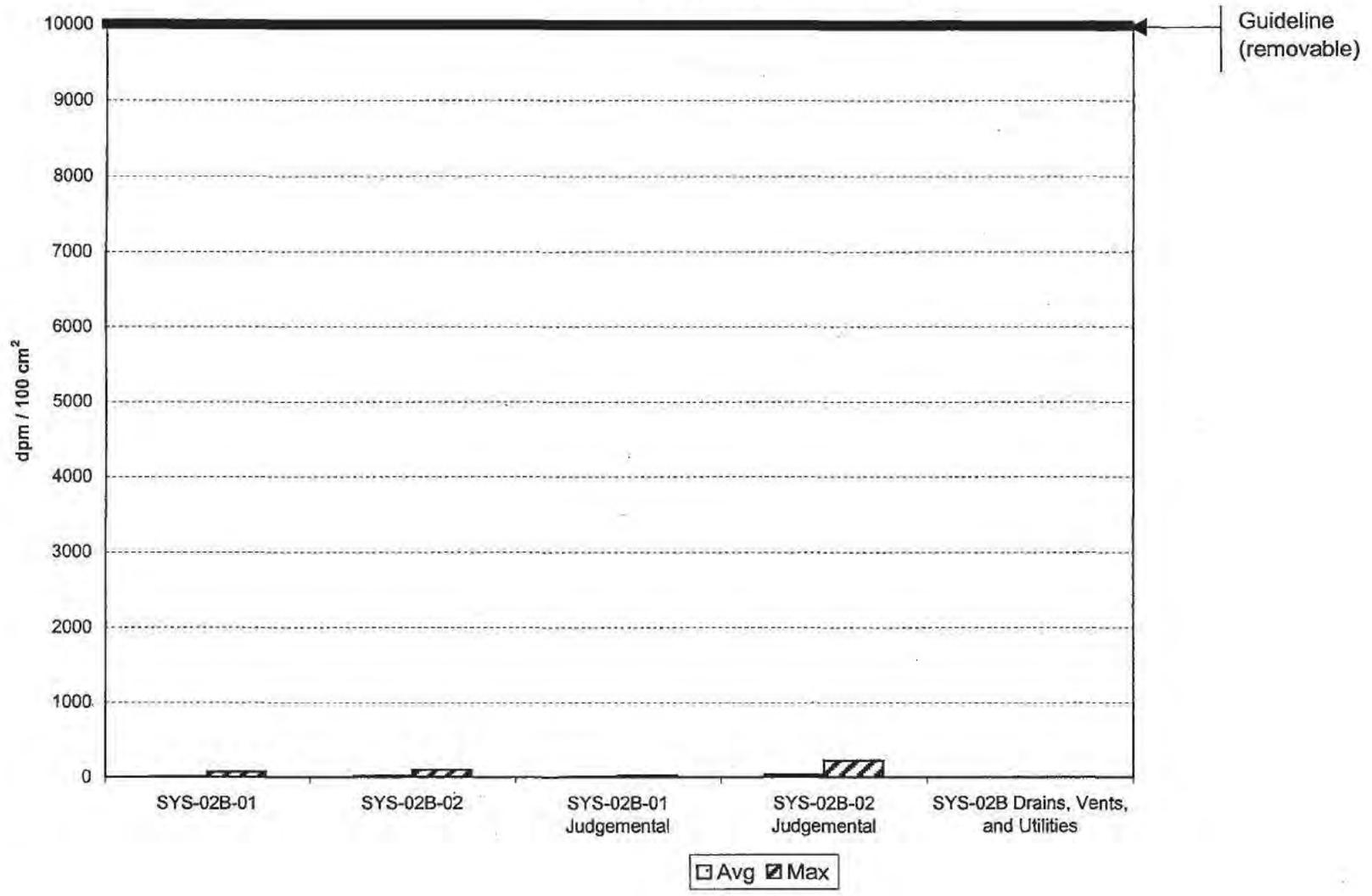
B8/15

Attachment B
Mound - T Building Final Status Survey
Beta Activity (removable)



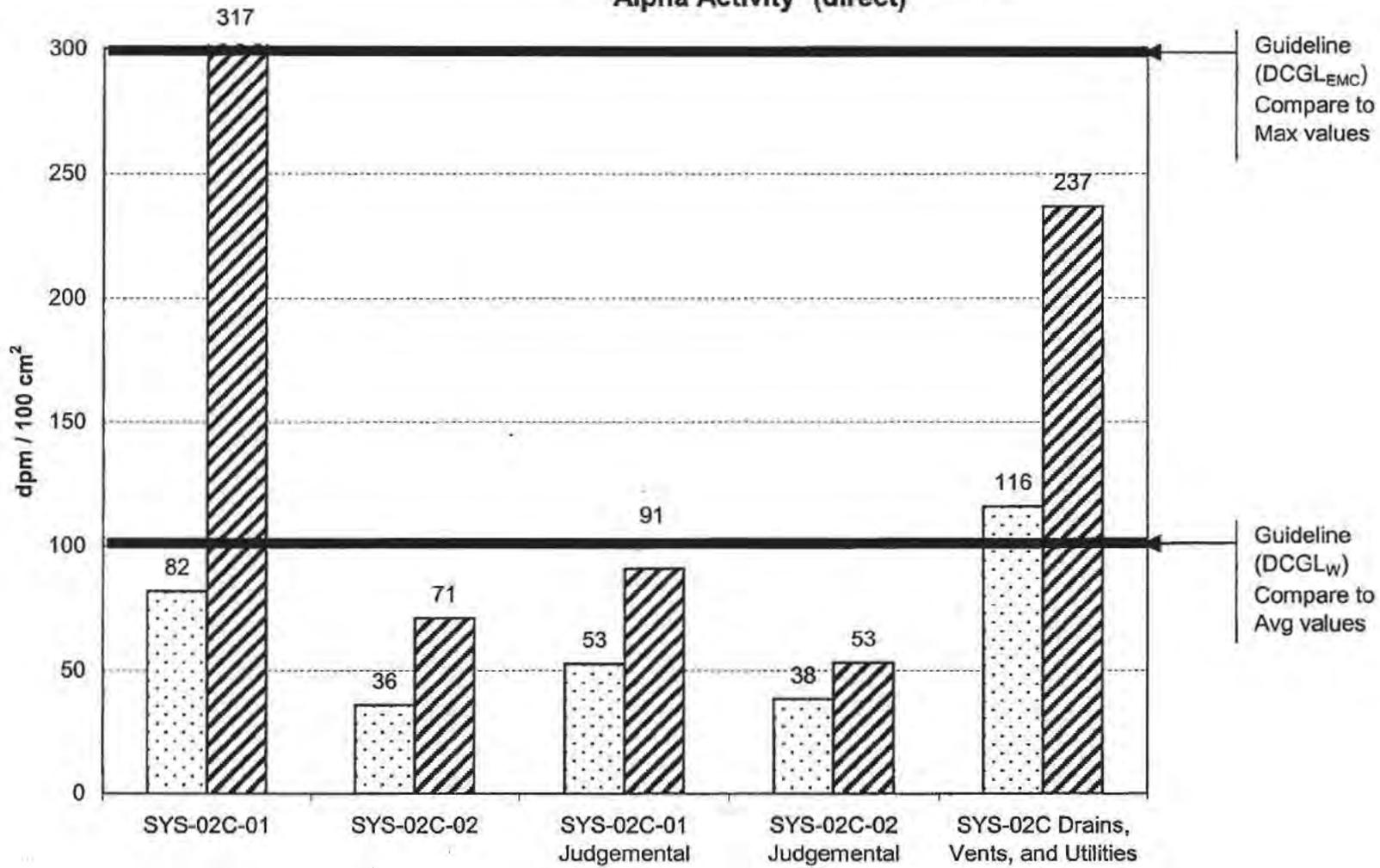
B9/15

Attachment B
Mound - T Building Final Status Survey
Tritium Activity (removable)



Bio/15

Attachment B
Mound - T Building Final Status Survey
Alpha Activity* (direct)

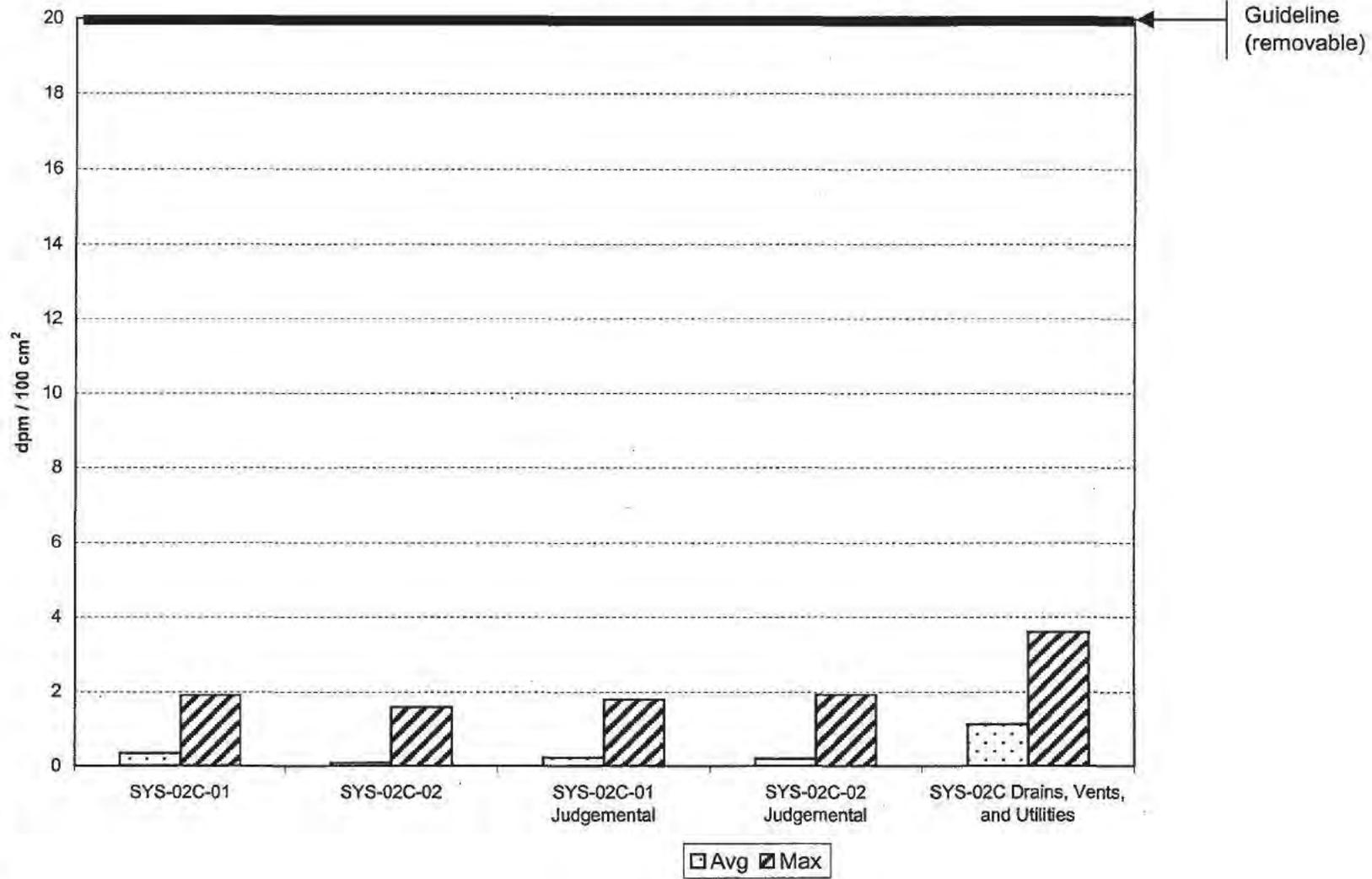


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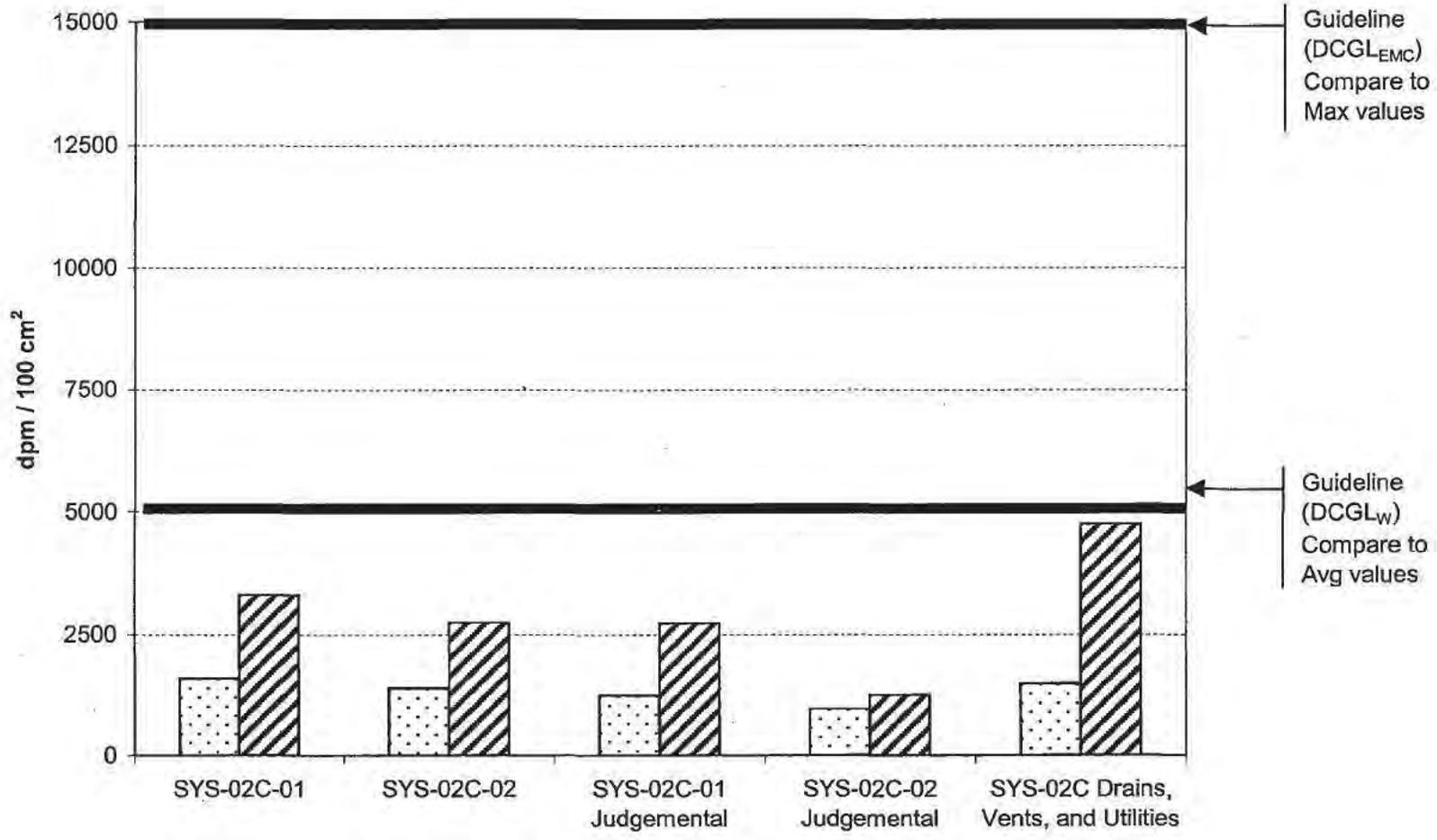
B.1/S

**Attachment B
Mound - T Building Final Status Survey
Alpha Activity (removable)**



Bias

Attachment B
Mound - T Building Final Status Survey
Beta Activity* (direct)

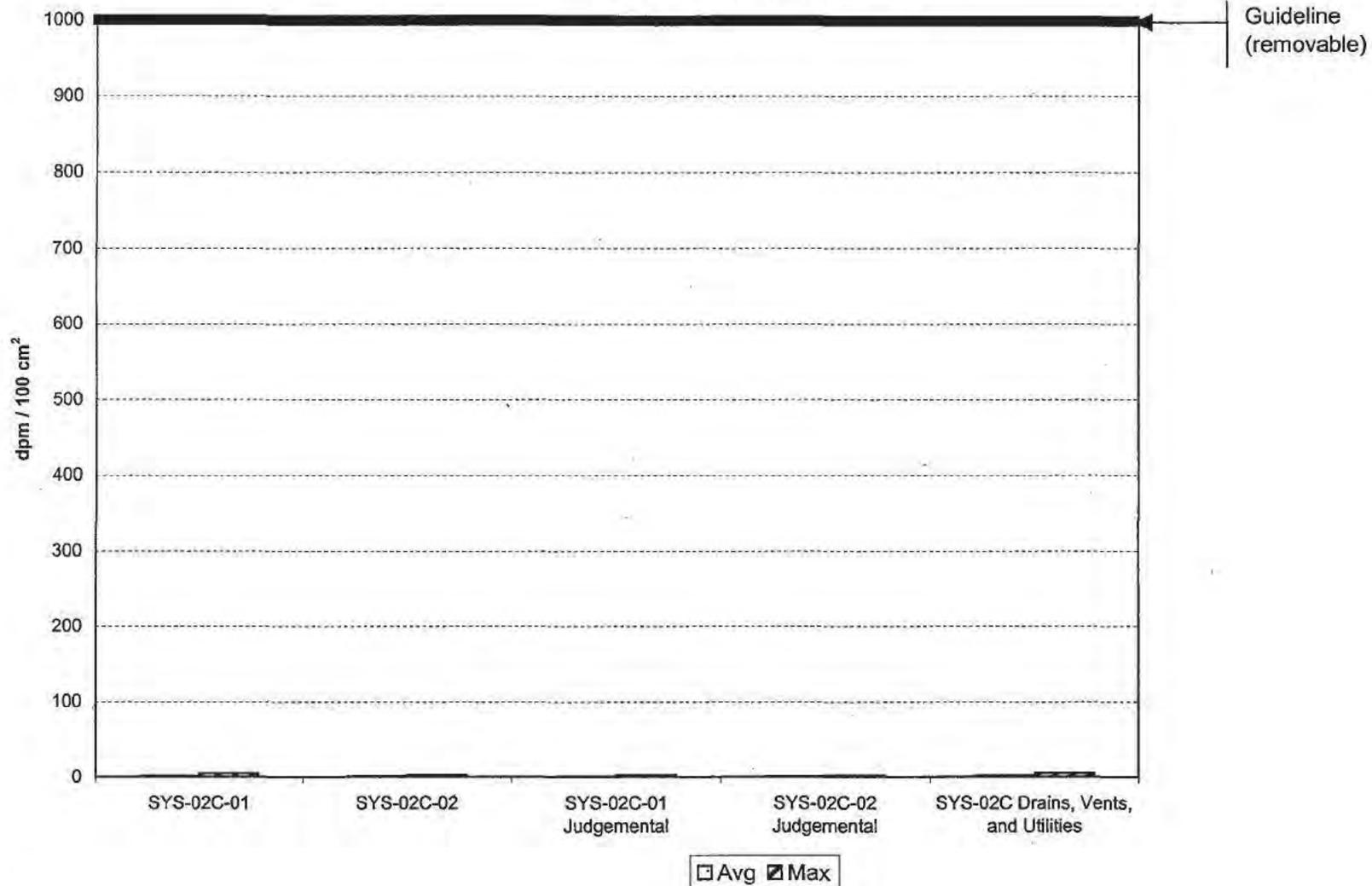


* Readings include natural background

□ Avg ▨ Max

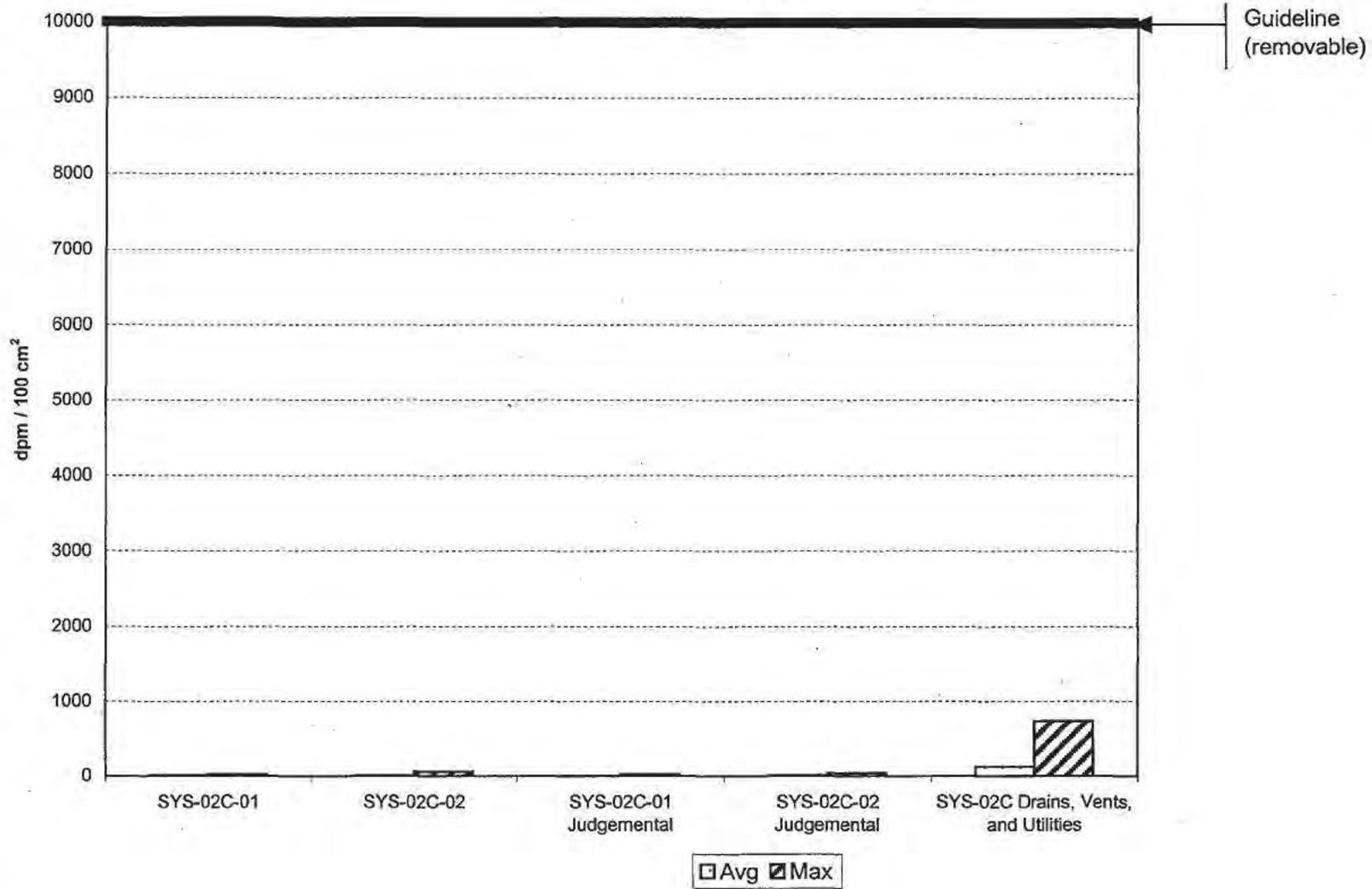
B13/15

Attachment B
Mound - T Building Final Status Survey
Beta Activity (removable)



B. 1/15

Attachment B
Mound - T Building Final Status Survey
Tritium Activity (removable)



BIS/B

Attachment C Retrospective Power Curves

NOTE: No power curves were generated. Survey Unit has volumetric contamination and was dose modeled.

Attachment D
Data Analysis Worksheets

T Building rooms SYS-02A (utility chase from brick wall of Room 99 to West Headhouse)

MARSSIM classification Class 1

Historical use SYS-02A and SYS-02B (utility chase from brick wall of Room 99 to West Headhouse), and SYS-02C (West Headhouse) are part of the building exhaust air system. SYS-02 originally classified as Class 2 survey unit was broken down into four survey units SYS-02A, SYS-02B, and SYS-02C, and SYS-02E. This report covers SYS-02A.

Survey description summary

alpha and beta scan: floor – 100%

walls below 2 meters - 100%

walls above 2 meters – 25%

ceiling - approx. 1 meter area scanned around each static measurement

static measurements: 20 each static locations measurements on floor, walls, and ceiling

64 each judgmental location measurements on floor and walls below 2 meters

10 each judgmental location measurements on ceiling and walls above 2 meters

3 each judgmental location measurements on drains, vents, and

36 direct alpha and beta measurements were taken on the floor in SU# SYS-02A, SYS-02B, and SYS-02C for RESRAD-Build

* Judgmental measurements are biased measurements in locations where, in the professional judgment of the surveyor, the potential for residual contamination exists.

removable contamination measurements: smears were taken at each static measurement location and each was assayed for gross alpha, gross beta, and tritium

exposure rate measurement: 1 taken from 1 meter above floor in center of each room and 1 measurement taken at contact and from 1 meter above the floor at each of the 8 elevated areas in Room 58.

volumetric samples: random and biased concrete samples were collected from drilling 1" holes in the concrete floor and combining them into one composite sample to determine the average volumetric concentration for use in the RESRAD-Build dose models.

Composite sample from surface to 15 cm drill depths was used in renovation scenario to represent the average volumetric contamination.

Composite samples from surface to 15 cm drill depths were used in occupational scenario to represent the average surface contamination. The total activity to a depth of 15 cm was used to represent the surface activity in the occupational scenario.

potential radiation dose building occupancy scenario:

In this scenario, the worker was positioned in the center of the room at a distance of 1 meter above the contaminated floor. The exposure duration was 1 year.

potential radiation dose building renovation scenario:

In this scenario, the contaminated concrete floor was disturbed such that the worker is exposed to airborne radioactivity. The exposure duration in this scenario was 6 months.

Survey results summary

alpha and beta scan: Areas above alarm set points** were identified. See discussion below.

static measurements: Areas above alarm set points** were identified. See discussion below.

** Instruments are set to alarm at 75% of the applicable guideline values for the most restrictive alpha emitter and most difficult to detect beta emitter.

removable contamination measurements: all smears were below applicable guideline values

exposure rate measurement: less than 20 μ R/hr above natural background

volumetric sample: results are provided on page D26 in Attachment D

potential radiation dose from building occupancy scenario: 5.4 mrem/yr

potential radiation dose from building renovation scenario: 11.1 mrem/yr

Treatment of elevated*** measurements

At location SYS02A-01-20 on a vent an elevated alpha reading (964 dpm/100 cm²) was detected on RSDS MT-06-0380. A sample was taken for isotopic analysis. Based on the analytical results the decision was made to completely remove this ductwork. No further action is required.

Multiple elevated measurements were detected floor in SU# SYS-02A, which exceed the DCGL_{EMC} for gross alpha. After several unsuccessful remediation attempts the decision was made that volumetric contamination existed. The SU would be dose modeled. SU #s SYS-02A, SYS-02B, and SYS-02C are adjacent to each and share the same air space. Samples were pulled from all three areas and composited into one sample identified as SYS-02A. See sample locations on pages F83, F84, and F123. They were modeled together as a single room using assumptions to ensure that the estimated dose to future occupants is conservatively estimated. See pages D21 and D22 for dose model evaluations.

*** defined as direct gross alpha measurement exceeding 300 dpm/100 cm², direct beta measurement exceeding 15000 dpm/100 cm², removable gross alpha exceeding 20 dpm/100 cm², removable gross beta exceeding 1000 dpm/100 cm², or removable tritium exceeding 10,000 dpm/100 cm².

Conclusion

Survey units meet the release criteria.

Attachment D
Mound - T Building **SYS-02A**
Data Analysis Worksheet

SYS-02A (18 statistical samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.58	0.73	85	36	869
StDev	1.05	1.21	62	21	275
Max	3.60	3.85	252	83	1339

SYS-02A-01 Judgemental (67 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.52	0.69	86	182	1209
StDev	1.01	0.98	132	622	397
Max	3.98	4.02	909	5026	2609

SYS-02A-02 Judgemental (10 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.76	0.70	51	38	999
StDev	1.36	1.14	102	25	265
Max	3.98	3.04	335	83	1330

SYS-02A Drains, Vents, and Utilities (3 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.65	0.08	23	26	974
StDev	1.13	0.14	40	19	238
Max	1.96	0.25	69	48	1131

SYS-02A RESRAD (30 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	1.06	0.50	22	311	2302
StDev	1.62	0.81	23	633	847
Max	5.27	3.17	101	3507	5337

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Attachment D
Mound T - Building
Survey Unit SYS-02A
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-02A (18 statistical samples each)	SYS02A1S	06-0566	0.00	0.38	27	83	1091
	SYS02A2S	06-0566	0.00	3.85	54	23	665
	SYS02A3S	06-0566	0.00	0.00	39	79	1002
	SYS02A4S	06-0566	0.00	1.78	16	15	962
	SYS02A5S	06-0566	1.58	2.41	14	26	1052
	SYS02A6S	06-0566	0.00	0.00	59	49	1032
	SYS02A8S	06-0566	1.91	0.05	84	23	645
	SYS02A7S	06-0566	3.60	0.25	148	57	1032
	SYS02A9S	06-0566	0.00	0.00	109	45	893
	SYS02A10S	06-0566	0.00	0.00	158	15	546
	SYS02A11S	06-0566	0.00	2.74	252	11	437
	SYS02A12S	06-0566	1.71	0.00	75	23	565
	SYS02A15S	06-0566	0.00	1.68	82	38	1161
	SYS02A16S	06-0566	0.00	0.00	87	34	1339
	SYS02A17S	06-0566	0.00	0.00	174	19	526
	SYS02A18S	06-0566	0.00	0.00	49	26	526
	SYS02A19S	06-0566	0.00	0.00	41	53	1012
	SYS0A220S	06-0566	1.69	0.00	66	23	1161
	SYS-02A-01 Judgemental (67 samples each)	SYS02A0101S	06-0308	0.00	0.38	85	19
SYS02A0102S		06-0308	0.00	0.36	63	15	526
SYS02A0103S		06-0308	0.00	0.00	52	26	1359
SYS02A0104S		06-0308	1.90	0.42	45	42	1081
SYS02A0105S		06-0308	0.00	0.25	33	57	1587
SYS02A0106S		06-0308	0.00	1.59	38	79	1349
SYS02A0107S		06-0308	0.00	0.00	24	64	1131
SYS02A0108S		06-0308	1.68	0.00	328	30	675
SYS02A0109S		06-0308	0.00	0.00	222	11	794
SYS02A0110S		06-0308	0.00	0.00	130	42	1905
SYS02A0111S		06-0308	0.00	0.00	329	11	1538
SYS02A0112S		06-0308	0.00	1.58	41	79	1974
SYS02A0113S		06-0308	3.77	0.00	51	45	1190
SYS02A0114S		06-0308	0.00	0.00	75	23	764
SYS02A0115S		06-0308	0.00	0.00	7	23	813
SYS02A0116S		06-0308	0.00	0.00	28	26	1319
SYS02A0117S		06-0308	0.00	0.25	11	91	1617
SYS02A0118S		06-0308	1.69	0.00	18	68	1369
SYS02A0119S		06-0308	0.00	0.27	1	68	1637
SYS02A0122S		06-0308	0.00	2.78	12	49	2609
SYS02A0101J		06-0353	0.00	2.98	55	140	1210
SYS02A0102J		06-0353	0.00	0.00	95	522	1369
SYS02A0103J		06-0353	0.00	0.00	203	136	1885
SYS02A0104J		06-0353	0.00	1.78	345	94	1151
SYS02A0105J		06-0353	0.00	0.25	6	26	1181
SYS02A0106J		06-0353	0.00	2.71	183	87	1042
SYS02A0107J		06-0353	1.91	1.37	22	11	1042
SYS02A0108J	06-0353	0.00	0.00	45	79	873	
SYS02A0109J	06-0353	0.00	0.00	17	26	1131	

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Attachment D
Mound T - Building
Survey Unit SYS-02A
Data Analysis Worksheet

Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
		a	b	H	a	b
SYS02A0110J	06-0353	3.52	0.00	44	314	1468
SYS02A0111J	06-0353	0.00	1.71	296	60	1190
SYS02A0112J	06-0353	0.00	0.00	200	15	595
SYS02A0113J	06-0353	0.00	1.53	147	382	1012
SYS02A0114J	06-0353	0.00	0.00	909	26	704
SYS02A0115J	06-0353	0.00	0.00	126	110	1716
SYS02A0116J	06-0353	0.00	0.00	123	106	1012
SYS02A0117J	06-0353	0.00	0.00	144	15	565
SYS02A0118J	06-0353	0.00	0.00	76	23	1141
SYS02A0119J	06-0353	2.01	1.37	143	26	694
SYS02A0120J	06-0353	0.00	1.78	85	23	913
SYS02A0101J	06-0563	0.00	1.68	71	95	926
SYS02A0102J	06-0563	1.79	0.20	59	44	1163
SYS02A0103J	06-0563	2.01	0.12	6	28	1399
SYS02A0104J	06-0563	3.98	2.67	74	56	1044
SYS02A0105J	06-0563	0.00	0.00	2	28	1153
SYS02A0106J	06-0563	0.00	0.48	56	83	1301
SYS02A0107J	06-0563	1.91	4.02	1	91	1241
SYS02A0108J	06-0563	0.00	0.66	6	28	1567
SYS02A0109J	06-0563	0.00	0.38	1	28	1419
SYS02A0110J	06-0563	1.79	0.20	9	115	1241
SYS020102I	06-0504	0.00	1.52	44	83	1032
SYS020103I	06-0504	0.00	0.30	129	1002	1151
SYS020104I	06-0504	0.00	2.99	24	140	883
SYS020105I	06-0504	0.00	0.00	13	91	883
SYS020106I	06-0504	0.00	0.48	82	76	1101
SYS020107I	06-0504	0.00	0.27	59	91	942
SYS020108I	06-0504	0.00	1.85	5	378	1052
SYS020109I	06-0504	1.73	0.00	26	540	1131
SYS020110I	06-0504	1.61	0.32	8	197	1121
SYS020111I	06-0504	0.00	0.45	0	514	1389
SYS020112I	06-0504	0.00	0.00	2	60	962
SYS020113I	06-0504	1.74	0.00	22	42	952
SYS020114I	06-0504	1.93	2.55	104	5026	2520
SYS020115I	06-0504	0.00	0.26	30	8	992
SYS020116I	06-0504	0.00	0.40	70	60	1548
SYS020117I	06-0504	0.00	0.38	7	60	1577
SYS020118I	06-0504	0.00	0.36	12	121	1181
SYS02A0201J	06-0563	0.00	0.00	18	20	818
SYS02A0202J	06-0563	3.98	0.26	2	12	621
SYS02A0203J	06-0563	0.00	2.62	16	20	798
SYS02A0204J	06-0563	0.00	0.48	5	83	1281
SYS02A0205J	06-0563	0.00	0.27	60	40	1251
SYS02A0206J	06-0563	0.00	3.04	57	24	1330
SYS02A0207J	06-0563	0.00	0.00	335	52	897
SYS02A0208J	06-0563	1.69	0.28	6	32	1281
SYS02A0209J	06-0563	1.92	0.00	8	20	729
SYS02A0210J	06-0563	0.00	0.00	3	75	985

SYS-02A-01
Judgemental (67
samples each) -
continued

SYS-02A-02 Judgemental
(10 samples each)

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Attachment D
Mound T - Building
Survey Unit SYS-02A
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-02A Drains, Vents, and Utilities (3 samples each)	SYS02A0101D	06-0567	1.96	0.00	0	48	700
	SYS02A0101D	06-0362	0.00	0.25	69	19	1131
	SYS02A0101D	06-0304	0.00	0.00	0	11	1091
SYS-02A RESRAD (30 samples each)	SYSA020101S	06-0550	0.00	0.00	70	91	1498
	SYSA020102S	06-0550	3.52	0.08	40	91	1637
	SYSA020103S	06-0550	0.00	0.27	26	64	1677
	SYSA020104S	06-0550	0.00	0.66	61	60	1756
	SYSA020107S	06-0550	0.00	0.00	28	87	1677
	SYSA020108S	06-0550	0.00	0.48	21	64	1607
	SYSA020109S	06-0550	0.00	1.71	20	42	1349
	SYSA020101J	06-0550	0.00	0.00	28	3507	2391
	SYSA020102J	06-0550	0.00	0.00	32	306	1647
	SYSA020103J	06-0550	0.00	0.32	17	552	1855
	SYSA020104J	06-0550	1.68	0.00	13	219	1488
	SYSA020105J	06-0550	0.00	0.00	49	1039	1538
	SYS02A10S	06-0569	1.95	0.00	15	102	2093
	SYS02A11S	06-0569	0.00	0.00	3	151	2232
	SYS02A12S	06-0569	4.25	2.45	11	144	1667
	SYS02A13S	06-0569	0.00	0.00	10	295	3323
	SYS02A14S	06-0569	0.00	1.44	1	113	2688
	SYS02A15S	06-0569	1.69	1.39	1	72	2966
	SYS02A16S	06-0569	0.00	0.27	1	83	2321
	SYS02A17S	06-0569	0.00	0.00	10	238	2966
	SYS02A18S	06-0569	0.00	0.00	8	197	2431
	SYS02A19S	06-0569	1.93	0.00	10	166	1706
	SYS02A20S	06-0569	0.00	0.26	9	287	2748
	SYS02A21S	06-0569	1.71	1.43	11	174	3492
	SYS02A22S	06-0569	4.12	0.02	11	166	2798
	SYS020101J	06-0569	0.00	0.52	14	125	2113
	SYS020102J	06-0569	0.00	0.30	23	200	2113
	SYS020103J	06-0569	3.98	0.26	0	178	2530
	SYS020104J	06-0569	5.27	3.17	101	223	3423
	SYS020105J	06-0569	1.69	0.00	20	295	5337

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volumetric samples: random and biased concrete samples were collected from drilling 1" holes in the concrete floor and combining them into one composite sample to determine the average volumetric concentration for use in the RESRAD-Build dose models.

Composite sample from surface to 15 cm drill depths was used in renovation scenario to represent the average volumetric contamination.

Composite samples from surface to 15 cm drill depths were used in occupational scenario to represent the average surface contamination. The total activity to a depth of 15 cm was used to represent the surface activity in the occupational scenario.

potential radiation dose building occupancy scenario:

In this scenario, the worker was positioned in the center of the room at a distance of 1 meter above the contaminated floor. The exposure duration was 1 year.

potential radiation dose building renovation scenario:

In this scenario, the contaminated concrete floor was disturbed such that the worker is exposed to airborne radioactivity. The exposure duration in this scenario was 6 months.

Survey results summary

alpha and beta scan: Areas above alarm set points** were identified. See discussion below.

static measurements: Areas above alarm set points** were identified. See discussion below.

** Instruments are set to alarm at 75% of the applicable guideline values for the most restrictive alpha emitter and most difficult to detect beta emitter.

removable contamination measurements: all smears were below applicable guideline values

exposure rate measurement: less than 20 μ R/hr above natural background

volumetric sample: results are provided on page D26 in Attachment D

potential radiation dose from building occupancy scenario: 5.4 mrem/yr

potential radiation dose from building renovation scenario: 11.1 mrem/yr

Treatment of elevated*** measurements

5 elevated alpha measurements were found on the weir wall in area 7 at locations SYS02B11WW, SYS02B12WW, SYS02B13WW, SYS02B14WW, and SYS02B15WW (RSDS MT-06-0247), values respectively were 435, 733, 219, 193, and 8821 dpm/100 cm² alpha. The other elevated areas on MT-06-0247 were actually in the horizontal shaft and were followed up on RSDS MT-06-0484 in Final Status Survey Report for SYS-02E. A follow-up survey was conducted on RSDS MT-06-0248 for the locations on the weir wall. Nine elevated alpha areas were detected. The areas were remediated by grit blasting. A post remediation survey (RSDS MT-06-0598) was conducted. The follow-up measurements were reported: SYS02B11W previously identified as SYS02B11WW was 39 dpm/100 cm² alpha, SYS02B12W previously identified as SYS02B12WW was 27 dpm/100 cm² alpha, SYS02B13W previously identified as SYS02B13WW was 54 dpm/100 cm² alpha, SYS02B14W previously identified as SYS02B14WW was 54 dpm/100 cm² alpha, and SYS02B15W previously identified as SYS02B15WW was 39 dpm/100 cm² alpha. No further action is required.

One elevated alpha measurement was found on the wall above the upper mezzanine at location SYS02B0209J and one elevated alpha measurement was found on next to the door at location SYS02B0108J (RSDS MT-06-0520); values respectively were 130 and 264 dpm/100 cm² alpha. The areas were remediated by grit blasting. A follow-up survey was conducted on RSDS MT-06-0551. No elevated activity was identified during scanning. The follow-up measurement SYS02B0102PR previously identified as SYS02B0108J was 11 dpm/100 cm² alpha. The follow-up measurement SYS02B0202PR previously identified as SYS02B0209J was 34 dpm/100 cm² alpha. No further action is required.

Multiple elevated measurements were detected floor in SU# SYS-02B, which exceed the DCGL_{EMC} for gross alpha. After several unsuccessful remediation attempts the decision was made that volumetric contamination existed. The SU would be dose modeled. SU #s SYS-02A, SYS-02B, and SYS-02C are adjacent to each and share the same air space. Samples were pulled from all three areas and composited into one sample identified as SYS-02A. See sample locations on pages F83, F84, and F123. They were modeled together as a single room using assumptions to ensure that the estimated dose to future occupants is conservatively estimated. See pages D21 and D22 for dose model evaluations.

*** defined as direct gross alpha measurement exceeding 300 dpm/100 cm², direct alpha measurement exceeding 15000 dpm/100 cm², removable gross alpha exceeding 20 dpm/100 cm², removable gross alpha exceeding 1000 dpm/100 cm², or removable tritium exceeding 10,000 dpm/100 cm².

Conclusion Survey units meet the release criteria.

Attachment D
Mound - T Building Survey Unit SYS-02B
Data Analysis Worksheet

SYS-02B-01 (20 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.17	1.37	8	41	1728
StDev	0.53	1.28	16	33	502
Max	1.79	3.89	67	154	3097

SYS-02B-02 (24 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.37	0.71	15	41	1358
StDev	0.74	1.07	21	18	362
Max	1.95	4.19	97	83	2292

SYS-02B-01 Judgemental (12 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.34	1.19	3	44	1341
StDev	0.78	2.71	6	20	171
Max	2.02	9.65	20	89	1616

SYS-02B-02 Judgemental (23 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.25	0.44	34	43	1343
StDev	0.66	0.74	61	15	299
Max	1.93	2.83	225	89	2211

SYS-02B Drains, Vents, and Utilites (1 sample)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.00	2.98	1	32	1842
StDev	n/a	n/a	n/a	n/a	n/a
Max	0.00	2.98	1	32	1842

SYS-02B Statistical Data Points (44 samples)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Number	44	44	44	44	44
Average	0.28	1.01	12	41	1526
StDev	0.66	1.20	19	25	465
Max	1.95	4.19	97	154	3097

n/a not applicable

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Attachment D
Mound T - Building
Survey Unit SYS-02B
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-02B-01 (20 samples each)	SYS02B0117S	06-0584	0.00	0.38	8	46	1305
	SYS02B0118S	06-0584	0.00	2.68	0	19	1607
	SYS02B0119S	06-0584	0.00	0.30	0	19	1578
	SYS02B0120S	06-0584	0.00	1.78	0	31	1568
	SYS02B0112S	06-0584	0.00	0.25	5	35	1529
	SYS02B0113S	06-0584	0.00	0.00	0	31	1636
	SYS02B0114S	06-0584	0.00	1.59	0	27	1568
	SYS02B0115S	06-0584	0.00	0.00	0	50	1246
	SYS02B0116S	06-0584	0.00	2.36	0	50	1694
	SYS02B0111S	06-0584	0.00	1.63	3	19	1607
	SYS02B0110S	06-0584	0.00	2.97	2	12	1587
	SYS02B0108S	06-0584	0.00	2.71	67	35	1110
	SYS02B0107S	06-0584	0.00	2.78	3	35	1120
	SYS02B0106S	06-0584	0.00	3.89	35	154	2746
	SYS02B0109S	06-0584	1.68	0.10	20	62	2162
	SYS02B0105S	06-0584	0.00	0.00	0	69	1655
	SYS02B0104S	06-0584	0.00	0.38	9	23	1529
	SYS02B0103S	06-0584	1.79	0.20	0	12	2016
SYS02B0102S	06-0584	0.00	2.81	7	19	2201	
SYS02B0101S	06-0584	0.00	0.59	0	81	3097	
SYS-02B-02 (24 samples each)	SYS02B0224S	06-0585	1.95	0.00	31	30	1290
	SYS02B0223S	06-0585	0.00	0.36	97	19	1181
	SYS02B0222S	06-0585	0.00	0.00	3	19	1071
	SYS02B0221S	06-0585	0.00	4.19	8	45	1042
	SYS02B0220S	06-0585	0.00	0.25	2	26	1448
	SYS02B0219S	06-0585	0.00	1.59	3	23	1409
	SYS02B0218S	06-0585	0.00	0.00	5	26	1696
	SYS02B0217S	06-0585	0.00	0.66	13	30	1359
	SYS02B0216S	06-0585	1.73	2.21	16	38	1062
	SYS02B0215S	06-0585	0.00	0.00	20	45	1528
	SYS02B0214S	06-0585	0.00	0.45	0	30	2034
	SYS02B0213S	06-0585	0.00	1.58	44	26	1835
	SYS02B0212S	06-0585	0.00	1.53	22	49	1716
	SYS02B0201S	06-0585	0.00	0.00	6	34	1220
	SYS02B0202S	06-0585	1.68	0.10	21	60	1210
	SYS02B0203S	06-0585	0.00	0.40	20	38	1438
	SYS02B0204S	06-0585	0.00	0.38	12	60	1280
	SYS02B0205S	06-0585	0.00	0.36	8	15	1052
	SYS02B0206S	06-0585	0.00	0.30	4	45	2292
	SYS02B0207S	06-0585	1.90	0.00	22	83	883
SYS02B0208S	06-0585	0.00	0.00	0	72	1220	
SYS02B0209S	06-0585	0.00	2.71	0	64	813	
SYS02B0210S	06-0585	0.00	0.00	0	49	972	
SYS02B0211S	06-0585	1.68	0.00	7	49	1538	

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Attachment D
Mound T - Building
Survey Unit SYS-02B
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-02B-01 Judgemental (12 samples each)	SYS02B0101PR	06-0551	0.00	0.38	7	34	1616
	SYS02B0102PR	06-0551	0.00	1.52	4	11	1109
	SYS02B0101	06-0590	0.00	0.38	0	27	1169
	SYS02B0102	06-0590	0.00	9.65	0	31	1237
	SYS02B0103	06-0590	2.01	0.12	2	42	1198
	SYS02B0104	06-0590	0.00	0.00	2	50	1363
	SYS02B0105	06-0590	0.00	1.44	0	27	1256
	SYS02B0106	06-0590	2.02	0.00	3	58	1597
	SYS02B0107	06-0590	0.00	0.45	0	54	1256
	SYS02B0108	06-0590	0.00	0.00	0	54	1470
	SYS02B0109	06-0590	0.00	0.38	20	89	1305
SYS02B0110	06-0590	0.00	0.00	0	46	1519	
SYS-02B-02 Judgemental (23 samples each)	SYS02B07T2	06-0247	0.00	0.00	19	45	1419
	SYS02B08T2	06-0247	0.00	1.60	111	45	1419
	SYS02B09T2	06-0247	0.00	0.00	225	49	1250
	SYS02B10T2	06-0247	0.00	0.47	126	49	1181
	SYS02B0111W	06-0598	0.00	1.68	4	39	906
	SYS02B0112W	06-0598	0.00	0.00	0	27	954
	SYS02B0113W	06-0598	0.00	0.30	5	54	1052
	SYS02B0114W	06-0598	1.90	0.00	0	54	837
	SYS02B0115W	06-0598	0.00	0.00	4	39	1178
	SYS02B0116W	06-0598	0.00	0.00	0	46	1110
	SYS02B0201PR	06-0551	0.00	0.30	3	49	1779
	SYS02B0202PR	06-0551	1.90	2.83	150	34	1539
	SYS02B0203PR	06-0551	0.00	1.44	9	30	1463
	SYS02B0201	06-0590	0.00	0.48	7	62	1285
	SYS02B0202	06-0590	0.00	0.00	0	35	1178
	SYS02B0203	06-0590	0.00	0.00	0	46	1354
	SYS02B0204	06-0590	0.00	0.00	59	89	2211
	SYS02B0205	06-0590	0.00	0.00	0	42	1578
	SYS02B0206	06-0590	1.93	0.17	24	39	1451
	SYS02B0207	06-0590	0.00	0.00	36	31	1324
SYS02B0208	06-0590	0.00	0.36	0	15	1509	
SYS02B0209	06-0590	0.00	0.00	0	19	1412	
SYS02B0210	06-0590	0.00	0.58	0	42	1509	
SYS-02B Drains, Vents, and Utilities (1 sample)	SYS02B0101D	06-0591	0.00	2.98	1	32	1842

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T Building rooms SYS-02C (West Headhouse).

MARSSIM classification Class 1

Historical use SYS-02A and SYS-02B (utility chase from brick wall of Room 99 to West Headhouse), and SYS-02C (West Headhouse) are part of the building exhaust air system. SYS-02 originally classified as Class 2 survey unit was broken down into four survey units SYS-02A, SYS-02B, and SYS-02C, and SYS-02E. This report covers SYS-02C.

Survey description summary

alpha and beta scan: floor – 100%

walls below 2 meters - 100%

walls above 2 meters – 25%

ceiling - approx. 1 meter area scanned around each static measurement

static measurements: 20 each static locations measurements on floor and walls below 2 meters

20 each static location measurements on ceiling and walls above 2 meters

37 each judgmental location measurements on floor and walls below 2 meters

10 each judgmental location measurements on ceiling and walls above 2 meters

12 each judgmental location measurements on drains, vents, and utilities

* Judgmental measurements are biased measurements in locations where, in the professional judgment of the surveyor, the potential for residual contamination exists.

removable contamination measurements: smears were taken at each static measurement location and each was assayed for gross alpha, gross beta, and tritium

exposure rate measurement: 1 taken from 1 meter above floor in center of the area.

volumetric samples: random and biased concrete samples were collected from drilling 1" holes in the concrete floor and combining them into one composite sample to determine the average volumetric concentration for use in the RESRAD-Build dose models.

Composite sample from surface to 15 cm drill depths was used in renovation scenario to represent the average volumetric contamination.

Composite samples from surface to 15 cm drill depths were used in occupational scenario to represent the average surface contamination. The total activity to a depth of 15 cm was used to represent the surface activity in the occupational scenario.

potential radiation dose building occupancy scenario:

In this scenario, the worker was positioned in the center of the room at a distance of 1 meter above the contaminated floor. The exposure duration was 1 year.

potential radiation dose building renovation scenario:

In this scenario, the contaminated concrete floor was disturbed such that the worker is exposed to airborne radioactivity. The exposure duration in this scenario was 6 months.

Survey results summary

alpha and beta scan: Areas above alarm set points** were identified. See discussion below.

static measurements: Areas above alarm set points** were identified. See discussion below.

** Instruments are set to alarm at 75% of the applicable guideline values for the most restrictive alpha emitter and most difficult to detect beta emitter.

removable contamination measurements: all smears were below applicable guideline values

exposure rate measurement: less than 20 μ R/hr above natural background

volumetric sample: results are provided on page D26 in Attachment D

potential radiation dose from building occupancy scenario: 5.4 mrem/yr

potential radiation dose from building renovation scenario: 11.1 mrem/yr

Treatment of elevated*** measurements

At location SYS02C0101V on a piece of ductwork an elevated alpha reading (1753 dpm/100 cm²) was detected on RSDS MT-06-0417. The decision was made to remove this ductwork. Follow-up measurements were collected at the remaining open end at locations SYS02C0105R, SYS02C0106R, SYS02C0107R, and SYS02C0108R on RSDS MT-06-0474. The follow-up measurement for location SYS02C0107R was still elevated at 112 dpm/100 cm² alpha. Additional measurements were taken on RSDS MT-06-0524, which were also elevated. A coupon cut from the highest scan location in the remaining ductwork, that was located above the water was taken for isotopic analysis on RSDS MT-06-0530. When the sum of the ratios was evaluated it was determined that the surface activity meets the release criteria (sum of ratios = 0.82 based on the maximum alpha reading of 237 dpm/100 cm² taken on RSDS MT-06-0524). See page D16 for calculation.

One elevated alpha measurement was found on the north wall in area 5 at location S02C0102X and one elevated alpha measurement was found on the east wall in area 7 at location S02C0101X (RSDS MT-06-0407); values respectively were 1164 and 1876 dpm/100 cm² alpha. The areas were remediated by grit blasting. A follow-up survey to location S02C0101X (RSDS MT-06-0534) was conducted. No additional elevated activity was identified during scanning and the follow-up measurement SYS02C0101F was 34 dpm/100 cm² alpha. A follow-up survey to location S02C0102X (RSDS MT-06-0577) was conducted. No additional elevated activity was identified during scanning and the follow-up measurement SYS02C0115 was 67 dpm/100 cm² alpha. No further action is required.

One elevated alpha reading (722 dpm/100 cm²) was found on the east wall in area 7 at location SYS02C0101E (RSDS MT-06-0529); The area were remediated by grit blasting. A follow-up survey on RSDS MT-06-0561 was conducted. No additional elevated activity was identified during scanning and the follow-up measurement SYS02C0101PR was 23 dpm/100 cm² alpha. No further action is required.

Multiple elevated measurements were detected floor in SU# SYS-02C, which exceed the DCGL_{EMC} for gross alpha. After several unsuccessful remediation attempts the decision was made that volumetric contamination existed. The survey unit would be dose modeled. SU #s SYS-02A, SYS-02B, and SYS-02C are adjacent to each and share the same air space. Samples were pulled from all three areas and composited into one sample identified as SYS-02A. See sample locations on pages F83, F84, and F123. They were modeled together as a single room using assumptions to ensure that the estimated dose to future occupants is conservatively estimated. See pages D21 and D22 for dose model evaluations.

*** defined as direct gross alpha measurement exceeding 300 dpm/100 cm², direct beta measurement exceeding 15000 dpm/100 cm², removable gross alpha exceeding 20 dpm/100 cm², removable gross beta exceeding 1000 dpm/100 cm², or removable tritium exceeding 10,000 dpm/100 cm².

Conclusion Survey units meet the release criteria.

MDA values

Acid Etch Data Analysis (pCi/g)

lab ID GL11408

pCi/g

Group 3 (5000 dpm)		Group 2 (1000 dpm)		Group 1 (100 dpm)	
Pb-210	8.44	Th-232	4.87	Pu-238	28.65
U-238	229.1			Ra-226	14.08
Bi-210m	1.02			Ac-227	0.53
				Th-230	77.55
				Am-241	0.76
Total:	238.56	Total:	4.87	Total:	121.57
Fraction of Total	0.65	Fraction of Total	0.01	Fraction of Total Sample:	0.33

RSDS MT-06-0524

Maximum Gross Alpha Measurement: 237 dpm/100cm²

Group 1 Contribution: 79 dpm/100cm²

Group 2 Contribution: 3 dpm/100cm²

Group 3 Contribution: 155 dpm/100cm²

$$\frac{79}{100} + \frac{3}{1000} + \frac{155}{5000} = 0.82$$

The sum of the ratios of 0.82 is <1.0, therefore is acceptable for release

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Attachment D
Mound - T Building Survey Unit SYS-02C
Data Analysis Worksheet

SYS-02C-01 (20 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.34	1.25	6	82	1595
StDev	0.69	1.54	7	76	671
Max	1.91	4.97	22	317	3313

SYS-02C-02 (20 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.08	0.80	9	36	1393
StDev	0.35	0.90	14	16	401
Max	1.58	2.78	59	71	2739

SYS-02C-01 Judgemental (37 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.23	0.75	3	53	1237
StDev	0.59	1.00	5	21	300
Max	1.79	3.04	20	91	2728

SYS-02C-02 Judgemental (10 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	0.19	0.87	12	38	960
StDev	0.61	0.78	11	11	187
Max	1.93	1.78	41	53	1250

SYS-02C Drains, Vents, and Utilities (12 samples each)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Average	1.12	1.89	126	116	1482
StDev	1.44	1.97	241	82	1086
Max	3.60	5.56	731	237	4758

SYS-02C Statistical Data Points (40 samples)					
	Removable			Direct*	
	α (dpm/100 cm ²)	β (dpm/100 cm ²)	³ H (dpm/100 cm ²)	α (dpm/100 cm ²)	β (dpm/100 cm ²)
Number	40	40	40	40	40
Average	0.21	1.02	8	59	1494
StDev	0.56	1.27	11	59	555
Max	1.91	4.97	59	317	3313

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Attachment D
Mound T - Building
Survey Unit SYS-02C
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-02C-01 (20 samples each)	SYS02C0101S	06-0580	0.00	0.00	0	113	1577
	SYS02C0102S	06-0580	0.00	1.52	12	98	1736
	SYS02C0103S	06-0580	0.00	0.30	4	155	1984
	SYS02C0104S	06-0580	0.00	0.00	16	49	1210
	SYS02C0105S	06-0580	1.58	0.00	8	45	1190
	SYS02C0106S	06-0580	0.00	0.00	5	38	1329
	SYS02C0107S	06-0580	1.91	1.37	3	45	1250
	SYS02C0108S	06-0580	0.00	3.04	8	91	1310
	SYS02C0109S	06-0580	0.00	1.11	12	30	1121
	SYS02C0110S	06-0580	0.00	0.00	9	163	2153
	SYS02C0111S	06-0580	0.00	0.45	0	26	1488
	SYS02C0112S	06-0580	0.00	4.97	13	60	2550
	SYS02C0113S	06-0580	0.00	0.00	0	11	1151
	SYS02C0114S	06-0580	0.00	0.32	0	317	3313
	SYS02C0115S	06-0580	0.00	0.26	4	197	2996
	SYS02C0116S	06-0580	0.00	0.00	0	26	1260
	SYS02C0117S	06-0580	0.00	3.62	0	15	982
	SYS02C0118S	06-0580	1.61	2.62	22	57	1081
	SYS02C0119S	06-0580	0.00	1.71	0	49	1042
	SYS02C0120S	06-0580	1.64	3.69	13	53	1171
SYS-02C-02 (20 samples each)	SYS02C0201S	06-0581	0.00	1.68	5	60	1212
	SYS02C0202S	06-0581	0.00	1.52	3	44	1281
	SYS02C0203S	06-0581	0.00	1.55	1	28	1882
	SYS02C0204S	06-0581	0.00	0.00	6	44	2739
	SYS02C0205S	06-0581	1.58	1.22	3	28	1567
	SYS02C0206S	06-0581	0.00	0.48	2	48	1350
	SYS02C0207S	06-0581	0.00	0.27	1	52	1202
	SYS02C0208S	06-0581	0.00	0.66	0	44	1202
	SYS02C0209S	06-0581	0.00	0.00	4	20	1488
	SYS02C0210S	06-0581	0.00	2.78	6	40	1340
	SYS02C0211S	06-0581	0.00	0.00	0	20	1488
	SYS02C0212S	06-0581	0.00	2.71	1	71	1025
	SYS02C0213S	06-0581	0.00	0.28	32	8	1645
	SYS02C0214S	06-0581	0.00	0.00	8	16	1133
	SYS02C0215S	06-0581	0.00	0.26	6	28	956
	SYS02C0216S	06-0581	0.00	0.40	15	40	897
	SYS02C0217S	06-0581	0.00	0.00	19	20	1399
	SYS02C0218S	06-0581	0.00	0.00	0	32	1212
	SYS02C0219S	06-0581	0.00	1.71	59	40	1192
	SYS02C0220S	06-0581	0.00	0.45	5	32	1645

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Attachment D
Mound T - Building
Survey Unit SYS-02C
Data Analysis Worksheet

Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
		a	b	H	a	b.
SYS020101F	06-0534	0.00	2.62	4	34	1429
SYS02C0101PR	06-0561	0.00	0.00	2	23	1181
SYS02C0101	06-0577	0.00	0.00	0	28	1084
SYS02C0102	06-0577	1.79	0.20	6	44	1153
SYS02C0103	06-0577	0.00	0.00	2	63	1241
SYS02C0104	06-0577	0.00	1.78	0	60	1340
SYS02C0105	06-0577	0.00	0.00	0	40	1527
SYS02C0106	06-0577	1.69	0.28	3	16	1094
SYS02C0107	06-0577	0.00	0.27	0	36	1429
SYS02C0108	06-0577	0.00	3.04	0	20	1360
SYS02C0109	06-0577	0.00	1.11	6	40	946
SYS02C0110	06-0577	0.00	0.00	4	28	1074
SYS02C0111	06-0577	0.00	2.97	2	52	1192
SYS02C0112	06-0577	0.00	0.45	0	56	1251
SYS02C0113	06-0577	0.00	0.28	0	40	1172
SYS02C0114	06-0577	0.00	1.51	0	91	1074
SYS02C0115	06-0577	1.68	0.10	0	67	1537
SYS02C0116	06-0577	1.71	0.00	0	60	1419
SYS02C0117	06-0577	0.00	2.62	0	48	1232
SYS02C0118	06-0577	0.00	0.00	0	32	1350
SYS02C0119	06-0577	0.00	0.00	1	71	1330
SYS02C0120	06-0577	0.00	0.66	0	52	1104
SYS02C0121	06-0577	0.00	0.00	0	75	1222
SYS02C0122	06-0577	0.00	0.48	0	71	1320
SYS02C0123	06-0577	0.00	0.00	0	63	1094
SYS02C0124	06-0577	0.00	1.58	0	67	1064
SYS02C0125	06-0577	0.00	1.53	1	44	1222
SYS02C0101J	06-0582	0.00	0.00	2	26	794
SYS02C0102J	06-0582	0.00	0.00	7	26	923
SYS02C0103J	06-0582	0.00	0.00	16	91	1151
SYS02C0104J	06-0582	0.00	1.78	6	91	1131
SYS02C0105J	06-0582	0.00	1.44	2	72	2728
SYS02C0106J	06-0582	0.00	2.71	20	72	1121
SYS02C0107J	06-0582	0.00	0.00	15	83	1181
SYS02C0108J	06-0582	1.68	0.00	6	68	1240
SYS02C0109J	06-0582	0.00	0.00	1	38	1062
SYS02C0110J	06-0582	0.00	0.48	10	57	1002

SYS-02C-01 Judgemental (37 samples each)

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Attachment D
Mound T - Building
Survey Unit SYS-02C
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-02C-02 Judgemental (10 samples each)	SYS02C0201J	06-0582	0.00	0.45	10	26	754
	SYS02C0202J	06-0582	0.00	1.58	8	23	704
	SYS02C0203J	06-0582	0.00	0.28	41	38	1042
	SYS02C0204J	06-0582	1.93	0.00	8	45	1250
	SYS02C0205J	06-0582	0.00	1.50	5	26	1002
	SYS02C0206J	06-0582	0.00	1.57	10	45	1022
	SYS02C0207J	06-0582	0.00	0.00	0	30	913
	SYS02C0208J	06-0582	0.00	1.52	15	53	714
	SYS02C0209J	06-0582	0.00	0.00	6	42	1161
	SYS02C0210J	06-0582	0.00	1.78	16	53	1042
SYS-02C Drains, Vents, and Utilities (12 samples each)	SYS02C0105PR	06-0474	0.00	0.00	5	43	775
	SYS02C0106PR	06-0474	0.00	2.78	0	65	1077
	SYS02C0107PR	06-0474	0.00	2.97	0	58	935
	SYS02C0108PR	06-0474	3.60	4.68	0	112	954
	SYS02C01J	06-0524	0.00	2.62	252	237	1579
	SYS02C02J	06-0524	3.52	1.19	395	203	4758
	SYS02C03J	06-0524	1.91	0.05	731	234	1941
	SYS02C05J	06-0530	n/a	n/a	n/a	219	1438
	SYS020101V	06-0579	1.58	0.00	3	48	837
	SYS020102V	06-0579	1.69	0.28	0	79	1015
	SYS020103V	06-0579	0.00	5.56	0	24	1350
	SYS020101D	06-0579	0.00	0.66	0	69	1123

020/48

RESRAD-Build Evaluation for Mound T Building - West Headhouse

Survey Units SYS-02A and SYS-02B cover the utility chase from brick wall of Room 99 to West Headhouse, and SYS-02C covers the West Headhouse. The areas are part of the building exhaust air system. These areas have residual volumetric contamination. The contaminants of concern are Am-241, Th-230, Pu-238, Ag-108m, Bi-207, Bi-210m, Co-60, Cs-137 and Sr-90. Volumetric concrete samples were assayed using gamma spectroscopy. Sr-90, which is non-detectable with gamma spec, is assumed to be present at an equal activity concentration as Cs-137. This is a conservative assumption, since both are long-lived fission products, which are produced and decay at similar rates. The most restrictive $DCGL_w$ for these radionuclides is 100 dpm/100 cm² and the $DCGL_{EMC}$ is 300 dpm/100 cm². Multiple elevated measurements were detected on the floor area, which exceed the $DCGL_{EMC}$ for gross alpha. Composite samples from surface to 15 cm drill depths were collected to determine the extent of volumetric contamination. It was determined that volumetric contamination exists within the top 15 cm of the exposed concrete.

As stated in Appendix A of the Mound 2000, in the case of the presence of volumetric contamination the RESRAD-Build computer code can be used to determine the potential radiation dose to future building occupants. Doses were computed using both the building occupancy scenario (office worker) and the building renovation scenario (construction worker), as required in Appendix A of Mound 2000. Potential radiation dose to future workers was evaluated versus the established dose limit of 15 mrem/yr as stated in Appendix A of the Work Plan for Environmental Restoration of the DOE Mound Site, excluding naturally occurring radioactive materials (NORM). The RESRAD-Build computer code was used to assess potential radiation dose to future building occupants.

SU #s SYS-02A, SYS-02B, and SYS-02C are adjacent to each and share the same air space. They were modeled together as a single room using assumptions to ensure that the estimated dose to future occupants is overestimated. Reported doses for both the occupational and renovation scenarios include all three survey units.

Contamination is non-uniform in the areas. The areas will have a restriction on the disposal of the floor. The total floor area of the affected area is 102.2 m². The ceiling height is not the same in the entire area. For the RESRAD-Build calculations, the room volume needs to be accurately represented; actual ceiling heights in specific areas are unimportant. The height was selected such that the modeled volume was equivalent to the actual volume. Therefore, the modeled room had a floor area of 102.2 m² and a ceiling height of 4.77m.

Two different scenarios were modeled: building occupancy scenario and renovation scenario. The input parameters and assumptions used in the RESRAD-BUILD computer model were reviewed and concurred upon by the regulators and are provided on pages D23 and D24. In the occupancy scenario the future occupant is assumed to work full-time for 1 year (2340 hours) in the area. In the renovation scenario, the contaminant release rate is elevated due to some construction activity and the exposure duration is only 1508 hours.

The data used for this evaluation came from volumetric core sampling to a depth of 15 cm. Data were reported in units of pCi/g. Naturally occurring radioactive materials (NORM) in building materials (e.g. Th-228, Th-232, Ra-226, and Pb-210) were not used in the dose model. Laboratory MDA values were used when COCs were reported at less than or equal to their MDA. In order to be conservative the MDA values from the gamma spectroscopy were used because they were higher than alpha spectroscopy MDAs. Laboratory MDA values were not used when non-COCs were reported at less than or equal to the MDA. In the building occupancy scenario, contaminant levels were entered into the code in units of dpm/m². These inputs were generated by assuming that all contamination present to a depth of 15 cm is located on the surface and the density of concrete is 2.3 g/cm³. See pages D26 for input values.

The RESRAD-Build computer code was used to assess potential radiation dose to future building occupants in the cap area. Doses were computed using both the building occupancy scenario (office worker) and the building renovation scenario (construction worker), as required in Appendix A of Mound 2000. Since the potential doses from the building occupancy scenario (5.4 mrem/yr), and the building renovation scenario (11.1 mrem/yr) were both below 15 mrem/yr, no further action was required. See pages D35 and D46 for dose results.

Calculations in the SU #(s) SYS-02A, SYS-02B, and SYS-02C were done independently, without any consideration for additive dose contributions from the other areas. The significance of additive dose contributions from all areas to receptors in each area modeled with RESRAD-Build is captured on pages D47 – D48.

Conclusion: SU #s SYS-02A, SYS-02B, and SYS-02C meet the release criteria.

Parameters Used in the Building Occupancy Scenario

Parameter	Value used	Remarks
Number of rooms	1	Future airflow between T Building rooms is unknown.
Air exchange rate	0.8 hr ⁻¹	RESRAD-Build default value based on studies of various residential and commercial buildings (Yu et al. 2003).
Exposure duration	365.25 days	To match occupancy period in NUREG/CR-5512 building occupancy scenario (Beyeler et al. 1999).
Indoor fraction	0.267	To match 97.5 d/yr time in building in NUREG/CR-5512 (Beyeler et al. 1999).
Receptor location	X, Y, 1 (meters)	The X and Y values are such that the receptor is located in the center of room/source at a height of 1 meter above floor.
Receptor inhalation rate	33.6 m ³ /d	To match the 1.4 m ³ /h breathing rate in NUREG/CR-5512 (Beyeler et al. 1999).
Receptor indirect ingestion rate	1.12E-4 m ² /h	Mean value from the parameter distribution (Yu et al. 2003).
Source type	Area	It is assumed that contamination is only on the surface (Yu et al. 2003).
Direct ingestion rate	0	Direct ingestion of the floor is highly unlikely. Ingestion may occur indirectly as the floor erodes and small particles become available to contaminate an occupant's hands and subsequently be ingested. (Indirect ingestion is a separate parameter.)
Air release fraction	0.07	Most likely value from the parameter distribution (Yu et al. 2003).
Removable fraction	0.1	Assumes 10% of the contamination is removable (NUREG/CR-5512 default).
Time for source removal or source lifetime	10,000 days	Most likely value from parameter distribution (Yu et al. 2003).
Deposition velocity	0.01 m/s	RESRAD-Build default (Yu et al. 2003).
Resuspension rate	5E-7 s ⁻¹	RESRAD-Build default (Yu et al. 2003).
Time fraction	1	Exposed individual spends 100% of their time at the receptor location.
Radon release fraction	0.1	RESRAD-Build default (Yu et al. 2003).
Source geometry	-----	Disc source with area equal to room floor area. Receptor positioned 1 meter above center of source.

D03/48

Parameters Used in the Building Renovation Scenario

Parameter	Value used	Remarks
Number of rooms	1	Future airflow between T Building rooms is unknown.
Air exchange rate	0.8 h ⁻¹	RESRAD-Build default value based on studies of various residential and commercial buildings (Yu et al. 2003).
Exposure duration	179 days	To match renovation period in NUREG/CR-5512 building renovation scenario (Beyeler et al. 1999).
Indoor fraction	0.351	To match the 62.83 days spent in the building during renovation period in NUREG/CR-5512 building renovation scenario (Wernig et al. 1999).
Receptor location	X, Y, 1 (meters)	The X and Y values are such that the receptor is located in the center of room/source at a height of 1 meter above floor.
Receptor inhalation rate	38.4 m ³ /d	To match building renovation scenario with 1.6 m ³ / breathing rate of moderate activity given in the EPA Exposure Factor Handbook (US EPA 1997).
Receptor indirect ingestion rate	0	It is assumed that the ingestion is only from the direct contact with the source (Yu et al. 2003).
Source type	Volume	Contamination is assumed to be volumetric.
Direct ingestion rate	0.052 g/h	The effective transfer rate from NUREG/CR-5512 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation (Wernig et al. 1999).
Air release fraction	0.07	Most likely value from the parameter distribution (Yu et al. 2003).
Source erosion rate	4.1E-4 cm/d	It is assumed that the total source thickness of 15 cm can be removed in 100 years of building life (Yu et al. 2003).
Deposition velocity	0.01 m/s	RESRAD-Build default (Yu et al. 2003).
Resuspension rate	5E-7 s ⁻¹	RESRAD-Build default (Yu et al. 2003).
Time fraction	1	Exposed individual spends 100% of their time at the receptor location.
Source geometry	-----	Volumetric disc source, 15 cm thick, with area equal to room floor area. Receptor positioned 1 meter above center of source.

D24/48

References

Beyeler, W.E., et al., 1999, *Residual Radioactive Contamination from Decommissioning Parameter Analysis*, NUREG/CR-5512, Vol. 3, Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, D.C., Oct.

Yu, C., et al., 2003, *User's Manual for RESRAD-BUILD Version 3*, ANL/EAD/03-01, Environmental Assessment Division, Argonne National Laboratory, Argonne, IL, June.

Wernig, M.A., et al., 1999, *Residual Radioactive Contamination from Decommissioning: User's Manual*, NUREG/CR-5512, Vol. 2, Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, D.C., May.

U.S. Environmental Protection Agency, 1997, *Exposure Factor Handbook*, EPA/600/P-95/002Fa, Office of Research and Development, National Center for Environmental Assessment, Washington, D.C.

D25/48

Sample Results and RESRAD-Build Input Parameters for T-West Headhouse

FOR RESRAD-Build calcs., use:

Sample ID	GL11414	MDA value used	
		for building renovation [pCi/g]	for building occupancy scenario dpm/m ²
Am-241		1.00E-02	7.70E+03
Pu-238		7.10E-01	5.44E+05
Th-230		9.70E-01	7.43E+05
Ag-108m		1.00E-02	7.66E+03
Bi-207		1.00E-02	7.66E+03
Bi-210m		1.00E-02	7.66E+03
Co-60		1.00E-02	7.66E+03
Cs-137		1.00E-02	7.66E+03
Sr-90		1.00E-02	7.66E+03

formula used to convert [pCi/g] to [dpm/m²]

$$1 \text{ pCi/g} \times 10,000 \text{ cm}^2/\text{m}^2 \times 15 \text{ cm} \times 2.3 \text{ g/cm}^3 \times 2.22 \text{ dpm/pCi}$$

$$= 765,900 \text{ dpm/m}^2$$

D26/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

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Full Summary.....	9

D57/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

=====

=====

=====

RESRAD-BUILD Input Parameters

=====

=====

Number of Sources : 1
 Number of Receptors: 1
 Total Time : 3.652500E+02 days
 Fraction Inside : 2.670000E-01

----- Receptor Information -----

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.050	5.050	1.000	1.000	3.36E+01	1.12E-04

----- Receptor-Source Shielding Relationship -----

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

D28/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

==== Building Information =====

Building Air Exchange Rate: 8.00E-01 1/hr

Height[m]	Area [m2]	Air Exchanges [m3/hr]

		* * *
		* * *
		* * *
H1: 4.770		* Room 1 <=Q01: 3.90E+02
		* Q10 : 3.90E+02
		* LAMBDA: 8.00E-01
Area 102.200		* * *

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-07 [1/s]

029/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 5.05 y: 5.05 z: 0.00[m]
 Geometry:: Type: Area Area:1.02E+02 [m2] Direction: z
 Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 7.000E-02
 Removable fraction: 1.000E-01
 Time to Remove: 1.000E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: BUILD)

	[dpm/m2]	Dose Conversion Factor (Library: BUILD)		
		Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AM-241	7.700E+03	1.640E-03	2.000E-01	4.311E-05
PU-238	5.440E+05	1.441E-03	1.766E-01	2.572E-07
NP-237	0.000E+00	2.000E-03	2.432E-01	5.450E-04
U-234	0.000E+00	1.275E-04	5.946E-02	4.023E-07
U-233	0.000E+00	1.302E-04	6.081E-02	8.604E-07
TH-230	7.430E+05	2.468E-04	1.468E-01	9.189E-07
TH-229	0.000E+00	1.815E-03	9.730E-01	7.748E-04
RA-226	0.000E+00	5.991E-04	3.874E-03	4.685E-03
BI-210M	7.660E+03	4.315E-05	3.419E-03	6.486E-04
BI-207	7.660E+03	2.468E-06	9.009E-06	3.973E-03
PB-210	0.000E+00	3.275E-03	1.045E-02	4.730E-06
CS-137	7.660E+03	2.252E-05	1.437E-05	1.437E-03
AG-108M	7.660E+03	3.432E-06	1.275E-04	4.117E-03
SR-90	7.660E+03	6.892E-05	5.901E-04	1.041E-05
CO-60	7.660E+03	1.212E-05	9.865E-05	6.622E-03

D30/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

Evaluation Time: 0.00000000E+00 years

```

=====
=====
Assessment for Time: 1
Time =0.00E+00 yr
=====
=====

```

```

===== Source Information =====

```

Source: 1

```

Location:: Room : 1 x: 5.05 y: 5.05 z: 0.00 [m]
Geometry:: Type: Area Area:1.02E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 7.000E-02
Removable fraction: 1.000E-01
Time to Remove: 1.000E+04 [day]

```

Contamination::	Nuclide	Concentration [dpm/m2]
	AM-241	7.700E+03
	PU-238	5.440E+05
	NP-237	0.000E+00
	U-234	0.000E+00
	U-233	0.000E+00
	TH-230	7.430E+05
	TH-229	0.000E+00
	RA-226	0.000E+00
	BI-210M	7.660E+03
	BI-207	7.660E+03
	PB-210	0.000E+00
	CS-137	7.660E+03
	AG-108M	7.660E+03
	SR-90	7.660E+03
	CO-60	7.660E+03

D31/4P

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

Evaluation Time: 0.00000000E+00 years

RESRAD-BUILDDose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Total
	1	
Receptor 1	5.43E+00	5.43E+00
Total	5.43E+00	5.43E+00

D32/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

Evaluation Time: 0.00000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.30E-01	3.41E-05	2.51E-07	5.16E+00	9.66E-05	3.90E-02
Total	2.30E-01	3.41E-05	2.51E-07	5.16E+00	9.66E-05	3.90E-02

D33/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

Evaluation Time: 0.00000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241		
AM-241	4.05E-02	4.05E-02
NP-237	9.08E-09	9.08E-09
U-233	2.79E-15	2.79E-15
TH-229	1.12E-18	1.12E-18
U-238		
PU-238	2.42E+00	2.42E+00
U-234	1.16E-06	1.16E-06
TH-230	8.52E-12	8.52E-12
RA-226	2.11E-15	2.11E-15
PB-210	6.42E-19	6.42E-19
H-230		
TH-230	2.74E+00	2.74E+00
RA-226	1.36E-03	1.36E-03
PB-210	6.85E-07	6.85E-07
I-210M		
BI-210M	9.65E-03	9.65E-03
BI-207		
BI-207	5.29E-02	5.29E-02
CS-137		
CS-137	1.96E-02	1.96E-02
G-108M		
AG-108M	5.73E-02	5.73E-02
SR-90		
SR-90	3.30E-04	3.30E-04
CO-60		
CO-60	7.80E-02	7.80E-02

D34/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00

1 5.43E+00

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00

1 5.43E+00

D35/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

RESRAD-BUILD Table of Contents

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For time = 0.00E+00 yr	
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Receptor-Source Dose Summary.....	6
Dose by Pathway Detail.....	7
Dose by Nuclide Detail.....	8
Full Summary.....	9

D36-37/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

```

=====
=====
RESRAD-BUILD Input Parameters
=====
=====

```

Number of Sources : 1
 Number of Receptors: 1
 Total Time : 1.790000E+02 days
 Fraction Inside : 3.510000E-01

===== Receptor Information =====

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.050	5.050	1.000	1.000	3.84E+01	0.00E+00

===== Receptor-Source Shielding Relationship =====

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

D38/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

==== Building Information ====

Building Air Exchange Rate: 8.00E-01 1/hr

Height [m]	Air Exchanges [m3/hr]	
Area [m2]		

	*	*
	*	*
	*	<=Q01: 3.90E+02
H1: 4.770	Room 1	* Q10 : 3.90E+02
	LAMBDA: 8.00E-01	*
Area 102.200		*
	*	*

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-07 [1/s]

D39/48

———— Source Information ————

Source: 1

Location:: Room : 1 x: 5.05 y: 5.05 z: 0.00[m]
 Geometry:: Type: Volume Area:1.02E+02 [m2] Direction: z
 Pathway ::
 Direct Ingestion Rate: 5.200E-02 [gm/hr]
 Fraction released to air: 7.000E-02

Containment :: Number of Regions: 1 Contaminated Region: 1
 Region : 1
 Thickness [cm] :1.50E+01
 Density [g/cm3] :2.40E+00
 Material :Concrete
 Erosion Rate [cm/day] :4.10E-04
 Porosity :1.00E-01
 Eff. Diffusion [m2/s] :2.00E-05
 Emanation Fractions(1):2.00E-01
 (2):2.00E-01

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: BUILD)		
		Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/(pCi/m3)]
AM-241	1.000E-02	3.640E-03	4.440E-01	9.570E-05
PU-238	7.100E-01	3.200E-03	3.920E-01	5.710E-07
NP-237	0.000E+00	4.440E-03	5.400E-01	1.210E-03
U-234	0.000E+00	2.830E-04	1.320E-01	8.930E-07
U-233	0.000E+00	2.890E-04	1.350E-01	1.910E-06
TH-230	9.700E-01	5.480E-04	3.260E-01	2.040E-06
TH-229	0.000E+00	4.030E-03	2.160E+00	1.720E-03
RA-226	0.000E+00	1.330E-03	8.600E-03	1.040E-02
BI-210M	1.000E-02	9.580E-05	7.590E-03	1.440E-03
BI-207	1.000E-02	5.480E-06	2.000E-05	8.820E-03
PB-210	0.000E+00	7.270E-03	2.320E-02	1.050E-05
CS-137	1.000E-02	5.000E-05	3.190E-05	3.190E-03
AG-108M	1.000E-02	7.620E-06	2.830E-04	9.140E-03
SR-90	1.000E-02	1.530E-04	1.310E-03	2.310E-05
CO-60	1.000E-02	2.690E-05	2.190E-04	1.470E-02

D40/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

Evaluation Time: 0.00000000E+00 years

```

=====
=====
=====
Assessment for Time: 1
Time =0.00E+00 yr
=====
=====

```

==== Source Information =====

Source: 1

Location:: Room : 1 x: 5.05 y: 5.05 z: 0.00 [m]
 Geometry:: Type: Volume Area:1.02E+02 [m2] Direction: z
 Pathway ::
 Direct Ingestion Rate : 5.200E-02 [gm/hr]
 Fraction released to air: 7.000E-02

Containment :: Number of Regions: 1 Contaminated Region: 1
 Region : 1
 Thickness [cm] :1.50E+01
 Fraction Contaminated :1.00E+00
 Density [g/cm3] :2.40E+00

Contamination::	Nuclide	Concentration [pCi/g]
	AM-241	1.000E-02
	PU-238	7.100E-01
	NP-237	0.000E+00
	U-234	0.000E+00
	U-233	0.000E+00
	TH-230	9.700E-01
	TH-229	0.000E+00
	RA-226	0.000E+00
	BI-210M	1.000E-02
	BI-207	1.000E-02
	PB-210	0.000E+00
	CS-137	1.000E-02
	AG-108M	1.000E-02
	SR-90	1.000E-02
	CO-60	1.000E-02

Du/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

Evaluation Time: 0.00000000E+00 years

RESRAD-BUILDDose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Total
	1	
Receptor 1	1.11E+01	1.11E+01
Total	1.11E+01	1.11E+01

Dye/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

Evaluation Time: 0.00000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.30E-02	6.32E-05	4.67E-07	1.08E+01	6.36E-05	2.23E-01
Total	5.30E-02	6.32E-05	4.67E-07	1.08E+01	6.36E-05	2.23E-01

D43/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

Evaluation Time: 0.00000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241		
AM-241	8.34E-02	8.34E-02
NP-237	8.17E-09	8.17E-09
U-233	1.40E-15	1.40E-15
TH-229	2.61E-19	2.61E-19
PU-238		
PU-238	5.19E+00	5.19E+00
U-234	1.19E-06	1.19E-06
TH-230	4.31E-12	4.31E-12
RA-226	9.08E-17	9.08E-17
PB-210	1.15E-19	1.15E-19
TH-230		
TH-230	5.78E+00	5.78E+00
RA-226	2.43E-04	2.43E-04
PB-210	5.13E-07	5.13E-07
BI-210M		
BI-210M	3.30E-03	3.30E-03
BI-207		
BI-207	1.25E-02	1.25E-02
CS-137		
CS-137	4.60E-03	4.60E-03
AG-108M		
AG-108M	1.31E-02	1.31E-02
SR-90		
SR-90	3.86E-04	3.86E-04
CO-60		
CO-60	2.07E-02	2.07E-02

Dyck

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationwestheadhousewco60.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00

1 1.11E+01

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00

1 2.27E+01

D45/48

Title : Mound T Building - West Head House Buil

Input File : T:\T-Marssim\RESRAD\Tbldgwestheadhouseoccupancywco60.bld

RESRAD-BUILD Table of Contents

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Dose by Nuclide Detail.....	8
Full Summary.....	9

D46/48

T-Building Residual Contamination

There are five rooms/areas in T-Building with residual volumetric contamination. Surveys in these areas have resulted in the identification of contamination at levels exceeding the surface release guidelines established in Mound 2000. The RESRAD-Build computer code has been used to estimate the maximum dose to any future building occupant in each of these 5 areas. Calculations in each area were done independently, without any consideration for additive dose contributions from the other areas. The purpose of this narrative is to consider the significance of additive dose contributions from all areas to receptors in each area modeled with RESRAD-Build. This is necessary to ensure that the maximum dose to future building occupants is less than 15 mrem/year from all building sources combined.

Any potential dose contributions from areas where the levels of surface contamination are below the release criteria are assumed to contribute insignificantly to the dose of future building occupants. The following quotation is from Mound 2000, Appendix A, "Surface and Volumetric Release Criteria for Building Disposition:"

If there is no surface contamination above the surface contamination criteria (Table 1), it is reasonable to assume that there is no significant exposure due to existence of residual volumetric contamination.

This discussion is therefore limited to the 5 areas where surface contamination is above the Mound 2000 Table 1 values. The following table summarizes the results of the independent dose calculations for each area.

Area Description	Occupancy Scenario Dose (mrem/yr)			Renovation Scenario Dose (mrem/yr)		
	External	Internal	Total	External	Internal	Total
1S-10 (Room 16)	10.5	0.02	10.5	3.05	0.05	3.1
1C-15 (Room 61)	0.12	0.76	0.9	0.03	1.62	1.7
1C-16 (Room 63)	0.13	0.74	0.9	0.03	1.60	1.6
T-Cap* (Rooms 48, 57, 58, and 59)	8.87	0.02	8.9	1.83	0.04	1.9
SYS-02A** (West Head House)	0.2	5.2	5.4	0.0	11.1	11.1

* T Cap includes SU #s 1C-07, 1C-08, 1C-09, 1C-10, 1C-11, 1C-12, 1C-21, SYS-PRS 227, SYS-PRS 228, SYS-PRS 229, SYS-PRS 230, and SYS-PRS 339.

** SYS-02A includes SU #s SYS-02A, SYS-02B, and SYS-02C

In this analysis, it is important to point out that T-Building is divided into 3 bays, each bay separated by a 3-foot thick concrete wall. Of the 5 areas listed in the above table, only 1C-15, 1C-16, and T-Cap share the same bay. Although it is possible for airborne contamination to pass freely between bays, the 3-foot thick concrete walls effectively shield the external dose between bays, i.e., reducing the dose rate by more than a factor of 1000. For simplification in this analysis, computed doses from 1C-15, 1C-16, and T-Cap will simply be combined, leaving only 3 areas to consider.

Area Description	Occupancy Scenario Dose (mrem/yr)			Renovation Scenario Dose (mrem/yr)		
	External	Internal	Total	External	Internal	Total
1S-10	10.5	0.02	10.5	3.05	0.05	3.1
1C-15, 1C-16, and T-Cap combined for simplicity	9.12	1.52	10.6	1.88	3.25	5.1
SYS-02A	0.2	5.2	5.4	0.05	11.02	11.1

Since these 3 areas are isolated from each other with regard to external dose due to the 3-foot thick concrete wall that separates them, external dose components between the different areas may be ignored. Although some small component of the computed internal doses are from direct ingestion, for the purpose of this analysis, it is assumed that internal dose is all due to airborne contamination that may pass freely throughout the building. Therefore, the internal dose component to the building as a whole from each of the affected areas can be estimated using a ratio of the air volume of the affected area to the total building air volume. The total building air volume is approximately 42,000 m³.

Area Description	Modeled room air volume (m ³)	Ratio (modeled room air volume/building air volume)
1S-10	155	0.0037
1C-15, 1C-16, and T-Cap (combined for simplicity)	2480	0.059
West Head House	500	0.012

The computed internal dose from each area can then be multiplied by this ratio to estimate the internal dose component that could affect other areas. Internal dose contributions from each area to other parts of the building are given in the table below.

Area Description	Occupancy Scenario Dose (mrem/yr)	Renovation Scenario Dose (mrem/yr)
1S-10	0.00008	0.0002
1C-15, 1C-16, and T-Cap	0.09	0.192
West Head House	0.06	0.131
Total	0.15	0.32

As can be seen in the table, the total internal dose component to other parts of the building from all of the affected areas combined, including both occupancy and renovation scenarios at the same time, is less than 0.5 mrem. Therefore, since the maximum dose computed for any area independently was 10.6 mrem (1C-15, 1C-16, and T-Cap combined) and the addition of 0.5 mrem is still less than 15 mrem, it may be concluded that the maximum dose to any future building occupant will be less than 15 mrem when considering the collective dose from all 5 affected areas in T-Building.

Attachment E
Survey Plan Form
#T-01
(Revised 7-30-05)

SURVEY PLAN FORM					
SP NUMBER	T-01		DATE OF REQUEST		
TYPE OF SP	<input checked="" type="checkbox"/> FSS <input type="checkbox"/> CHARACTERIZATION <input type="checkbox"/> REFERENCE <input type="checkbox"/> OTHER:				
AREA/LOCATION	T Building				
PURPOSE	The purpose of this SPF is to perform a final status survey in Class 1 floors and lower walls and Class 2 ceilings and upper walls in T Building to support decisions on final disposition and free release of the building.				
SURVEY UNIT # 1	See Attachment 1		SURVEY UNIT # 4		
SURVEY UNIT # 2			SURVEY UNIT # 5		
SURVEY UNIT # 3			SURVEY UNIT # 6		
SURVEY TYPE					
SURFACE SCAN	<input checked="" type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input checked="" type="checkbox"/> ALPHA	INST. TYPE	Shonka PSPC	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Refer to SHONKA Surface Contamination Monitor (SCM) operating procedures.
		PROBE TYPE	2 ft, 4ft, or 6 ft		
SURFACE SCAN	<input checked="" type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input checked="" type="checkbox"/> ALPHA	INST. TYPE	L-2350	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Scan surface at a rate of 1/2" per second at a distance of not more than 1/4" from the surface
		PROBE TYPE	43-37 Floor Probe or 43-68 Hand Probe		
SURFACE SCAN	<input checked="" type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input checked="" type="checkbox"/> ALPHA	INST. TYPE	L-2360	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Refer to MD-80036, Op 30030, Operation of Ludlum 2360 Scaler/ratemeter with Ludlum 43-89 alpha/beta scintillator
		PROBE TYPE	43-89 hand probe		
STATIC MEASUREMENT	<input checked="" type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input checked="" type="checkbox"/> ALPHA	INST. TYPE	L-2350	COUNT TIME & DETECTOR DISTANCE FROM SURFACE	Perform 2 minute counts (α) and 1 minute count (β) at specified locations not more than 1/4" from the surface for hand probe (30 seconds (α) and (β) counts if using floor probe).
		PROBE TYPE	43-68 Hand Probe (or 43-37 Floor)		
STATIC MEASUREMENT	<input checked="" type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input checked="" type="checkbox"/> ALPHA	INST. TYPE	L-2360	COUNT TIME & DETECTOR DISTANCE FROM SURFACE	Refer to MD-80036, Op 30030, Operation of Ludlum 2360 Scaler/ratemeter with Ludlum 43-89 alpha/beta scintillator
		PROBE TYPE	43-89 hand probe		
GENERAL AREA EXPOSURE RATE MEASUREMENT	<input type="checkbox"/> BETA <input checked="" type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE	Micro Rem meter	DETECTOR DISTANCE FROM SURFACE	Perform general area exposure rate measurements 1 meter (m) from the surface.
		PROBE TYPE			
COMMENTS AND GENERAL REQUIREMENTS	All surveys shall be performed and documented in accordance with Mound Radiological Control procedures. Perform scan surveys prior to fixed-point surveys. Ensure building surfaces are clean and free of loose debris, dirt, and obstructions prior to performing surveys. Rad Con shall document all discrepancies from the above sampling and surveying instructions on the RSDS.				

Continued next page

E1/9

Specific Sampling and Survey Instructions Continued**Safety Considerations**

1. Obtain assistance from the responsible building custodian for access to upper walls, ceilings, roof, etc.
2. Exercise extreme caution when performing surveys from ladders, lifts, or scaffolds.
3. Follow appropriate site safety procedures when accessing areas requiring fall protection measures.
4. Ensure ventilation units are de-energized prior to attempting to collect a sample from them.
5. Obtain approval and assistance from the responsible building custodian to dismantle any equipment for sample collection.
6. Use L2360 if locations are not safely accessible using the L2350 (e.g. close tight spaces, on top roofs, etc).

Scanning using Ludlum 2350-1 with 43-37 (floor) and 43-68 (hand) probes

1. Verify that the rate meters are set to alarm at or below 225 dpm/100 cm² alpha and 11250 dpm/100 cm² beta. (The RPOC or Rad Engineer will provide cpm values for alarm set points).
2. Scan at a rate of ½ inch per sec at a distance of not more than ¼ " from the surface.
3. Perform a static measurement at every location where an indication of elevated activity is observed.
4. Record the locations and document the results of the area scanned on the RSDS.

Scanning using Ludlum 2360 with 43-89 probe

1. Scan in accordance with instrument procedures at a rate of ½ inch per sec at a distance of not more than ¼ " from the surface.
2. Perform a static measurement at every location where an indication of elevated activity is observed.
3. Record the locations and document the results of the area scanned on the RSDS.

Scanning using SHONKA Position Sensitive Proportional Counter (PSPC) with 2', 4' and 6' probes

1. Scan in accordance with instrument procedures at a rate of 0.4 inch per sec for alpha and 4.0 inch per sec for beta, at a distance of not more than ¼ " from the surface.
2. Perform a static measurement at every location where an indication of elevated activity is observed.
3. Record the locations and document the results of the area scanned on the RSDS.

Continued next page

E2/9

Specific Sampling and Survey Instructions Continued**Scanning in Class 1 areas**

1. Scan 100% of the floor and walls up to 2 meters

Scanning in Class 2 areas

1. Scan at least 25% of walls above 2 meters using a serpentine pattern with scan paths spaced three probe widths apart.
2. On ceilings and in crawlspaces, scan an area of approximately 1 m² around each static measurement location.

Static measurements

1. When using hand probes, the count time is 2 min for alpha measurements and 1 min for beta measurements. When using the floor probe, the count time for alpha and beta measurements is 30 sec.
2. Perform integrated counts at all pre-designated sample location and at any elevated locations identified by scanning.
3. Perform at least 10 measurements on beams, supports, or other horizontal structural surfaces in each survey unit where, in the judgment of the surveyor, a potential exists for residual contamination.
4. Record the location and document the results on the RSDS in accordance with Mound Rad Con procedures.
5. Document the gross activity for each location (no "<" or ">" values).

Data Point Location

1. Locate the data points in each survey unit.
2. Mark each data point with tape or other non-permanent marking.
3. Document locations on the appropriate RSDS.

General Area Exposure Rate Measurements

1. Perform general area exposure rate measurement using Micro Rem survey meter in each room in the survey unit at a distance of 1 meter (m) from the floor.
2. Record reading results (microRem/hr) including background on RSDS in accordance with Mound Rad Con procedures (no "<" or ">" values).

Loose Surface Contamination

1. Obtain a smear of 100cm² at each pre-designated static measurement location.
2. Count each smear for alpha, beta, and ³H.
3. Record location and attach results on the RSDS in accordance with Mound Rad Con procedures (no "<" or ">" values).

Continued next page

E3/9

Specific Sampling and Survey Instructions Continued

Quality Control

1. Check Configuration Index (CI) for latest revision of procedures.
2. Daily source checks will be performed at the beginning and end of each day in accordance with Mound Rad Con procedures.
3. 16 fixed measurement data points will be selected for resurvey from the pool of Class 1 areas. Data points selected for resurvey should include the highest and lowest measurement from the data pool.
4. 16 smears will be randomly selected for recount from the pool of Class 1 areas.
5. 5% of the scan measurements taken in Class 1 areas will randomly be selected for replicate scan surveys.
6. Follow Rad Con procedures for Chain of Custody requirements.
7. Ensure alpha and beta smear results are obtained before performing ³H analysis.
8. Record location and results on the RSDS in accordance with Mound Rad Con procedures.

APPROVAL SIGNATURES

Project Engineer	<i>Mary Sizemore</i>	DATE	7-30-05
Radiological Engineer	<i>Christy M...</i>	DATE	7/30/05
Manager	<i>FBO Mue</i>	DATE	8/1/05

SP CLOSE-OUT SIGNATURES

Project Engineer		DATE	
Radiological Engineer		DATE	
Manager		DATE	

COMMENTS

Eu/g

ATTACHMENT 1: SPF T-01**Floors and walls < 2m**

1C-01-1	2C-01-1
1C-02-1	2C-02-1
1C-03-1	2C-03-1
1C-04-1	2C-04-1
1C-05-1	2C-05-1
1C-06-1	2C-06-1
1C-07-1	2C-07-1
1C-08-1	2C-08-1
1C-09-1	2C-09-1
1C-10-1	2C-10-1
1C-11-1	2C-11-1
1C-12-1	2C-12-1
1C-13-1	2C-13-1
1C-14-1	2C-14-1
1C-15-1	2C-15-1
1C-16-1	2C-16-1
1C-17-1	2C-17-1
1C-18-1	2C-18-1
1N-01-1	2C-19-1
1N-04-1	2N-06-1
1N-07-1	2N-07-1
1N-08-1	2N-08-1
1S-05-1	2S-06-1
1S-06-1	2S-07-1
1S-07-1	2S-08-1
1S-09-1	2S-09-1
1S-10-1	2S-10-1
1S-11-1	2S-12-1
1S-12-1	2S-13-1
1C-19-1	2S-14-1
1C-20-1	2S-15-1

ATTACHMENT 1 continued: SPF T-01**Ceilings and walls > 2m**

1C-01-2	2C-01-2
1C-02-2	2C-02-2
1C-03-2	2C-03-2
1C-04-2	2C-04-2
1C-05-2	2C-05-2
1C-06-2	2C-06-2
1C-07-2	2C-07-2
1C-08-2	2C-08-2
1C-09-2	2C-09-2
1C-10-2	2C-10-2
1C-11-2	2C-11-2
1C-12-2	2C-12-2
1C-13-2	2C-13-2
1C-14-2	2C-14-2
1C-15-2	2C-15-2
1C-16-2	2C-16-2
1C-17-2	2C-17-2
1C-18-2	2C-18-2
1N-01-2	2C-19-2
1N-04-2	2N-06-2
1N-07-2	2N-07-2
1N-08-2	2N-08-2
1S-05-2	2S-06-2
1S-06-2	2S-07-2
1S-07-2	2S-08-2
1S-09-2	2S-09-2
1S-10-2	2S-10-2
1S-11-2	2S-12-2
1S-12-2	2S-13-2
1C-19-2	2S-14-2
1C-20-2	2S-15-2

SURVEY PLAN FORM

SPF NUMBER	T-11	DATE OF REQUEST	
TYPE OF SPF	<input type="checkbox"/> FSS <input checked="" type="checkbox"/> CHARACTERIZATION <input type="checkbox"/> REFERENCE <input type="checkbox"/> OTHER:		
AREA/LOCATION	T Building		
PURPOSE	The purpose of this SPF is to collect a concrete samples for characterization.		
SURVEY UNIT #	1C-15/16 (Rooms 61 and 63)	SURVEY UNIT#	
SURVEY UNIT #	2C-15 (Room 277)	SURVEY UNIT #	1C-11/12/21 (Rooms 57,58, and 59)
SURVEY UNIT #	1S-10 (Room 16)	SURVEY UNIT #	1C-08/09/10 (cap area Room 48)

SAMPLE TYPE

<input type="checkbox"/> SURFACE SOIL SAMPLE:
<input type="checkbox"/> SUB-SURFACE SOIL SAMPLE:
SEDIMENT SAMPLE:
<input type="checkbox"/> CORE SAMPLE:
<input type="checkbox"/> WATER SAMPLE:
<input checked="" type="checkbox"/> OTHER: Samples of concrete as specified on page 2 of this SPF

SURVEY TYPE

SURFACE SCAN	<input type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE		SCAN RATE & DETECTOR DISTANCE FROM SURFACE	
STATIC MEASURE-MENT	<input type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE		COUNT TIME & DETECTOR DISTANCE FROM SURFACE	
STATIC MEASURE-MENT	<input type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE		COUNT TIME & DETECTOR DISTANCE FROM SURFACE	
General Area Exposure Rate Measurement	<input type="checkbox"/> BETA <input checked="" type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE	Bicron Micro Rem meter	DETECTOR DISTANCE FROM SURFACE	Perform general area exposure rate measurements at specified locations at 1 meter (m) from the surface

COMMENTS	<p>All surveys shall be performed and documented in accordance with Mound Radiological Control procedures.</p> <p>Perform fixed-point measurements surveys prior to collecting concrete sample.</p> <p>Collect same amount of sample at each location. Ensure clean sample equipment is used for each distinct sample area/room.</p> <p>Rad Con shall document all discrepancies from the above sampling and surveying instructions on the RSDS.</p>
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E7/9

SPECIFIC SAMPLING / SURVEY INSTRUCTIONS

Safety Considerations

1. Obtain assistance from the responsible building custodian for assistance in collecting bulk sample.
2. Exercise extreme caution when collecting bulk samples.
3. Follow appropriate site safety procedures when accessing areas with potential electrical hazards.

Concrete Sample: Obtain one (1) bulk sample at each static and judgmental measurement location identified on the floor. (Applies to rooms 16, 61, 63, 48, 57, 58, and 59)

1. Composite and homogenize the samples from the drilled locations at a depth of 6" (15 cm) into one sample container per room. Composite and homogenize the samples from the area to be capped in 48 into a separate sample container. Composite and homogenize the samples from the area to be capped in Room 59 into a separate sample container.
2. Seek guidance from Radiological Engineer/RPOC with regard to type of sample container, sample mass at each location and total mass needed for each area/room composite sample.
3. Ensure each sample is labeled with date, time, room #, survey unit #, and sample ID#.
4. Record sample location on Radiological Survey Data Sheet.
5. Ensure chain of custody is maintained for all samples.
6. Process sample for gamma spectroscopy analysis in accordance with laboratory procedures.
7. Repeat process at a depth of approximately 12" (30 cm) at each of the previous locations using a smaller drill bit. Thoroughly clean the holes prior to second drilling.

Concrete Sample: Obtain one (1) bulk sample at each static and judgmental measurement location on the floor. (Applies to Room 277)

1. Composite the samples from the drill samples collected at a depth of approximately 5" (13 cm) into one sample container. Adjust the drill depth so that the bit penetrates as deep as possible without going through the floor.
2. Seek guidance from Radiological Engineer/RPOC with regard to type of sample container, sample mass at each location and total mass needed for each area/room composite sample.
3. Ensure each sample is labeled with date, time, room #, survey unit #, and sample ID#.
4. Record sample location on Radiological Survey Data Sheet.
5. Ensure chain of custody is maintained for all samples.
6. Process sample for gamma spectroscopy analysis in accordance with laboratory procedures.

General Area Exposure Rate Measurements

1. Perform general area exposure rate measurements at specified locations at 1 meter (m) from the surface.

Quality Control (QC) Measurements

1. Field duplicate taken in every 10 or fewer field samples
2. Replicate sample taken every 20 samples of a similar matrix

Reference Sample (obtain one bulk sample from an area that has not been impacted)

APPROVAL SIGNATURES

Project Engineer	<i>Mary E. Sizemore</i>	DATE	<i>3-9-06</i>
Radiological Engineer	<i>Robert M. Coblenz</i>	DATE	<i>3-9-06</i>
Project Manager	<i>Ken ...</i>	DATE	<i>3-9-06</i>

SP CLOSE-OUT SIGNATURES

Project Engineer		DATE	
Radiological Engineer		DATE	
Project Manager		DATE	

COMMENTS

NOTE: Rad Con shall document all discrepancies from the above sampling and surveying instructions on the Radiological Survey Data Sheet.

Ensure that the mass of sample collected from each location is consistent. Composite all sample from a given room to form a single bulk room sample for each room. After sample has been homogenized sample size may be reduced if necessary as need for the gamma spec lab.

Attachment F

Summary of Attached Radiological Survey Data Sheets

RSDS	date	su	Content
MT-06-0304	13-Mar-06	SYS02A	DVU
MT-06-0308	14-Mar-06	SYS02A	static (01)
MT-06-0362	28-Mar-06	SYS02A	dose (crawlspc 99)
MT-06-0363	28-Mar-06	SYS02A	judgemental (01)
MT-06-0504	09-May-06	SYS02A	Investigative
MT-06-0550	25-May-06	SYS02A	static (01) judgemental (01)
MT-06-0563	02-Jun-06	SYS02A	judgemental (01,02)
MT-06-0566	03-Jun-06	SYS02A	static (01, 02)
MT-06-0567	03-Jun-06	SYS02A	DVU (t99)
MT-06-0569	04-Jun-06	SYS02A	static (01) judgemental (01)

Attachment F Summary of Attached Radiological Survey Data Sheets - continued

RSDS	date	su	Content
MT-06-0247	27-Feb-06	SYS02B	judgmental (01,02)
MT-06-0248	27-Feb-06	SYS02B	judgmental (02)
MT-06-0520	13-May-06	SYS02B	static, judgmental
MT-06-0551	30-May-06	SYS02B	Investigative
MT-06-0562	02-Jun-06	SYS02B	Investigative
MT-06-0584	16-Jun-06	SYS02B	static (01) dose
MT-06-0585	16-Jun-06	SYS02B	static (02)
MT-06-0590	17-Jun-06	SYS02B	judgmental (01,02)
MT-06-0591	17-Jun-06	SYS02B	DVU
MT-06-0598	26-Jun-06	SYS02B	investigative

Attachment F Summary of Attached Radiological Survey Data Sheets - continued

RSDS	date	su	Content
MT-06-0407	07-Apr-06	SYS02C	Judgmental (01)
MT-06-0417	11-Apr-06	SYS02C	judgmental
MT-06-0474	02-May-06	SYS02C	scan (area 5) judgmental (01)
MT-06-0524	17-May-06	SYS02C	judgmental (01)
MT-06-0529	18-May-06	SYS02C	scan, Investigative
MT-06-0530	19-May-06	SYS02C	judgmental
MT-06-0534	22-May-06	SYS02C	Investigative
MT-06-0561	02-Jun-06	SYS02C	Investigative
MT-06-0572	06-Jun-06	SYS02C	scan (areas 5,6 7)
MT-06-0573	06-Jun-06	SYS02C	Investigative
MT-06-0574	07-Jun-06	SYS02C	Investigative
MT-06-0577	09-Jun-06	SYS02C	Investigative
MT-06-0579	13-Jun-06	SYS02C	DVU (t-99 crawlspace)
MT-06-0580	14-Jun-06	SYS02C	static (01)
MT-06-0581	14-Jun-06	SYS02C	static (02)
MT-06-0582	14-Jun-06	SYS02C	judgmental (01,02)
MT-06-0589	16-Jun-06	SYS02C	dose

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) <u>T Bldg</u>	SURVEY NO. <u>MT-06-0304</u>
PURPOSE: <u>DRAINS, VENTS, AND UTS</u> <u>SYSO2A</u>	RWP NO. <u>NA</u>
	DATE: <u>3-13-06</u>
	TIME: <u>1300</u>

MAP/DRAWING

SEE ATTACHED

NO VENTS OR UTILITIES IN AREAS ~~1,3,4~~
1,2,3,4. 1 DRAW IN AREA 2
AREAS 5,6,7 WERE UNDER WATER
WHEN THIS SURVEY WAS DONE.
SYSO2A WILL BE RE-CATEGORIZED
AND RE-DONE

this survey WAS DONE INITIALLY before
this UNIT WAS SPLIT AND WAS REDONE
on ~~3-28-06~~ ⁶⁻³⁻⁰⁶ ~~4/19/06~~ ⁰⁵⁶⁷ ~~7-1-06~~ ⁰⁵⁶⁷ ~~7-1-06~~ ⁰⁵⁶⁷ ~~7-1-06~~ ⁰⁵⁶⁷
~~RS05~~ # MT-06-~~0362~~ ⁰⁵⁶⁷ ~~0362~~ ⁰⁵⁶⁷ ~~0362~~ ⁰⁵⁶⁷

LEGEND: # = mrem/hr (γ) whole body Δ # = mrem/hr neutron (#) = swipe number
E = mrem/hr ($\beta + \gamma$) extremity on contact # = air sample number (#/a) or β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L2350	5920/5929	11-15-06
U A		

Completed by: (Signature) <u>[Signature]</u>	Date: <u>3-13-06</u>
Completed by: (Print Name) <u>George Hodges / Stephen Richardson</u>	
Counted by: (Signature) <u>[Signature]</u>	HP# <u>See</u> Date: <u></u>
Counted by: (Print Name) <u>attached</u>	<u>F1/353</u>
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>4-5-06</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

COPY

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060313_1857.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0304.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2st
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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F3/353

PM 30F 8

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPMI	A:2S%	MESSAGES	P#
3/13/06	6:58:26 PM	-1		10.00	8	8	14	3	619.10	0	21.8	B	1
3/13/06	7:09:16 PM	0		2.00	445	421	2	0	584.63	835	6.8		1
3/13/06	7:11:58 PM	1		2.00	0	0	0	6	509.64	0	4646.7		1

~

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F4/353

pq 4 of 8
MT-06-0304

APP

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_020
Batch Ended: 3/13/06 15:15
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0304 RICHARDSON [1] GWD

Detector ID	Sample ID
D1	1

Alpha Activity		
DPM	σ	Flags
0.00	2.05	

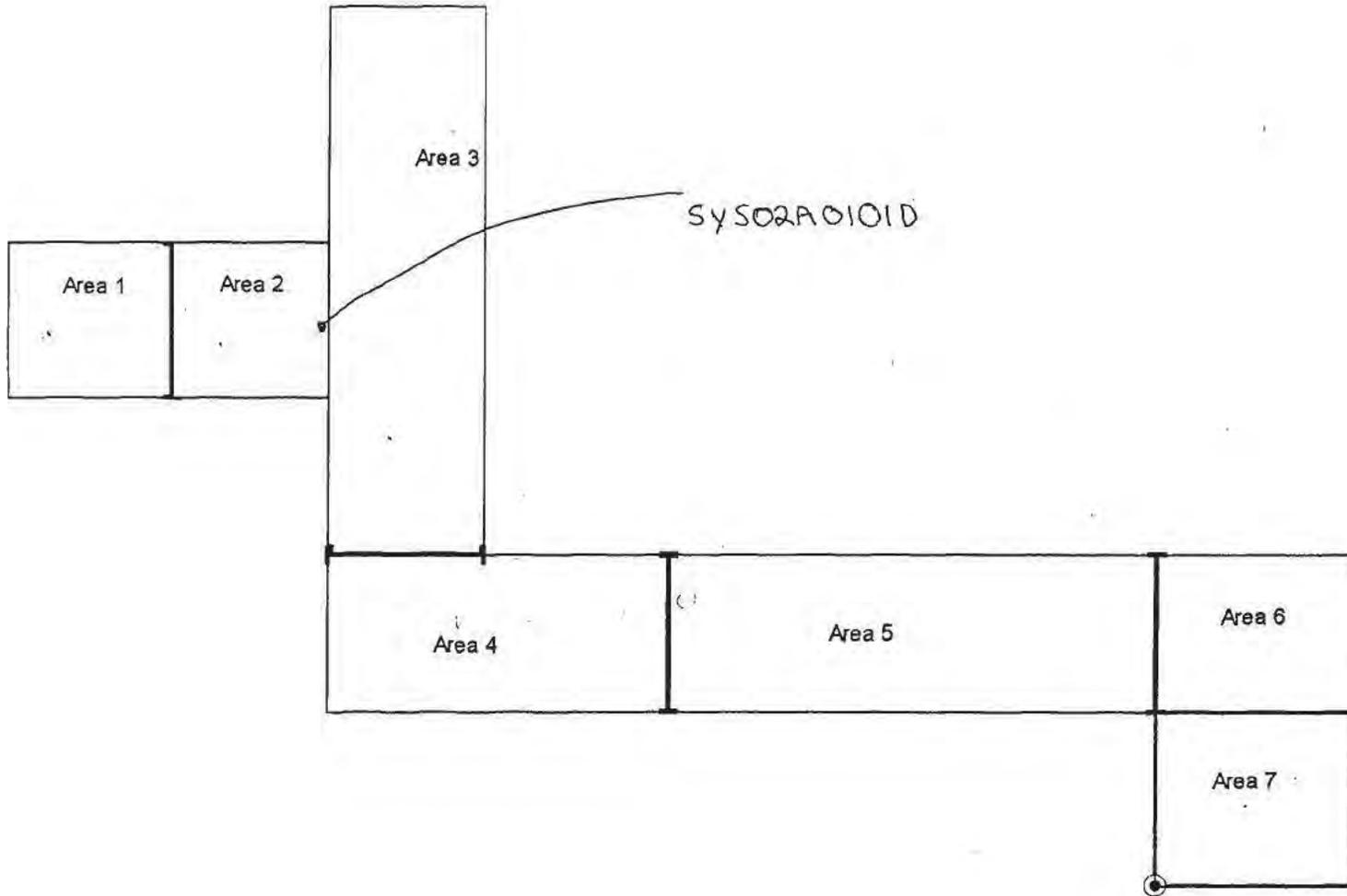
Beta Activity		
DPM	σ	Flags
0.00	1.25	

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pg 5 of 8
mg

SYS-02A Drains, vents, and utilities
Class 2



COPY

F8/

pg 8 of 8
MT-06.0304

RADIOLOGICAL SURVEY DATA SHEET

7.18.06
 Page 1 of 30

LOCATION: (BLDG./AREA/ROOM) T. BLDG. 99 CRAWLSPACE	SURVEY NO. MT 06 0308
PURPOSE: LOWER STATICS SY502A	RWP NO. N/A
	DATE: 3-15-06
	TIME: 1300

MAP/DRAWING

SCANNED 1m² AROUND
 EACH LOCATION & 1p
 SEE page for ELEVATED
 READINGS

COPY

Analytical Results attached for 01205 215, 235.
 WERE DECONNED 01205 (ON VENTILATION) WAS
 REMOVED 6-28-06
 01215 moved to ~~the~~ floor, wall #4 does not exist

LEGEND: # = mrem/hr (γ) whole body
 # E = mrem/hr (β+γ) extremity on contact

⚠ # = mrem/hr neutron

= air sample number

⊙ # = swipe number

⊙ #/α or β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06
N A		
/		

Completed by: (Signature) <i>[Signature]</i>	Date: 3-15-06
Completed by: (Print Name) S. RICHARDSON G. Hodges	
Counted by: (Signature) SEE ATTACHED	HP# N/A Date: N/A
Counted by: (Print Name) sheets	F9/353
Reviewed/Approved by: (Signature) <i>[Signature]</i>	Date: 4-5-06
Reviewed/Approved by: (Print Name) Jerry Taylor	

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	SEE	ATTACHED		0101S
2				0102S
3				0103S
4				0104S
5				0105S
6				0106S
7				0107S
8				0108S
9				0109S
10				0110S
11				0111S
12				0112S
13				0113S
14				0114S
15				0115S
16				0116S
17				0117S
18				0118S
19				0119S
20				0120S
21				0121S
22				0122S
23	SEE	ATTACHED		0123S
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
N/A				

COMMENTS: N/A

COPY

- NOTES:
- See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
 - To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
 - Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.
- F10/353

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_049
 Batch Ended: 3/17/06 10:36
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0308 [23] RICHARDSON 3-17-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.20		0.38	1.85	
A2	2	0.00	2.01		0.36	1.65	
A3	3	0.00	2.26		0.00	1.26	
A4	4	1.90	2.12		0.42	1.71	
B1	5	0.00	1.89		0.25	1.68	
B2	6	0.00	1.89		1.59	1.93	
B3	7	0.00	2.18		0.00	1.34	
B4	8	1.68	1.95		0.00	1.20	
C1	9	0.00	2.07		0.00	1.27	
C2	10	0.00	1.93		0.00	1.16	
C3	11	0.00	2.12		0.00	1.27	
C4	12	0.00	2.00		1.58	1.97	
D1	13	3.77	2.90		0.00	1.26	
D2	14	0.00	2.15		0.00	1.20	
D3	15	0.00	2.09		0.00	1.25	
D4	16	0.00	2.04		0.00	1.18	
B1	17	0.00	1.89		0.25	1.68	
B2	18	1.69	1.85		0.00	1.12	
B3	19	0.00	2.20		0.27	1.88	
B4	20	1.68	1.99		1.64	2.07	
C1	21	1.73	2.11		2.21	2.52	
C2	22	0.00	1.97		2.78	2.30	
C3	23	2.02	2.16		2.82	2.53	

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F11/353

3-10-06
Page 1 of 4

4-10-06
pg 30 = 18 30
MT-06-0308
RLH

Protocol# 2 - MARSSIM_Smear_2.lsa

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060317_1331.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0308.002 <
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

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File 353

MT-06-0308
P4 40=1830
3/17/06

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LOM	tsIE	DPM1	A:2S%	MESSAGES	P#
3/17/06	1:31:55 PM	-1		10.00	9	8	11	2	629.70	0	21.7	B	2
3/17/06	1:42:45 PM	0		2.00	135	125	0	0	558.26	258	12.6		2
3/17/06	1:45:27 PM	1		2.00	46	38	0	5	597.52	85	23.0		2
3/17/06	1:48:09 PM	2		2.00	34	30	0	1	605.79	63	27.5		2
3/17/06	1:50:52 PM	3		2.00	29	24	0	5	613.12	52	30.8		2
3/17/06	1:53:35 PM	4		2.00	25	23	0	1	614.20	45	33.8		2
3/17/06	1:56:18 PM	5		2.00	19	16	0	2	667.31	33	40.2		2
3/17/06	1:59:00 PM	6		2.00	22	19	0	0	643.01	38	37.0		2
3/17/06	2:01:41 PM	7		2.00	13	11	0	0	602.69	24	52.7		2
3/17/06	2:04:24 PM	8		2.00	180	124	0	45	622.44	328	10.8		2
3/17/06	2:07:09 PM	9		2.00	122	89	0	35	624.08	222	13.3		2
3/17/06	2:09:54 PM	10		2.00	71	65	0	6	613.78	130	17.9		2
3/17/06	2:12:36 PM	11		2.00	182	172	4	2	631.57	329	10.8		2
3/17/06	2:15:19 PM	12		2.00	23	19	0	5	651.60	41	35.4		2
3/17/06	2:18:02 PM	13		2.00	27	24	0	1	571.60	51	32.0		2
3/17/06	2:20:43 PM	14		2.00	43	39	0	0	658.08	75	24.2		2
3/17/06	2:23:24 PM	15		2.00	4	4	2	0	658.57	7	133.2		2
3/17/06	2:26:06 PM	16		2.00	16	13	0	2	656.58	28	45.6		2
3/17/06	2:29:09 PM	17		2.00	6	5	0	0	619.44	11	92.7		2
3/17/06	2:31:52 PM	18		2.00	10	9	0	0	606.87	18	63.7		2
3/17/06	2:34:34 PM	19		2.00	10	9	0	0	603.27	18	66.1		2
3/17/06	2:37:16 PM	20		2.00	29	28	1	1	436.84	62	30.8		2
3/17/06	2:39:57 PM	21		2.00	4	3	0	0	662.50	7	133.2		2
3/17/06	2:42:38 PM	22		2.00	7	6	1	0	595.49	12	88.9		2
3/17/06	2:45:19 PM	✓23		2.00	3	3	0	0	649.77	6	162.2		2

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M 505830
MT-06.0308

T-Building STATICS LOWER SYS02A

RSDS# MT-06-0308 RCT: RCT:

Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02A0101S	5920		5929	1	1	3/14/06	8:16	5	120	19
ALPHA	SYS02A0102S	5920		5929	1	2	3/14/06	8:25	4	120	15
ALPHA	SYS02A0103S	5920		5929	1	3	3/14/06	8:36	7	120	26
ALPHA	SYS02A0104S	5920		5929	1	4	3/14/06	9:42	11	120	42
ALPHA	SYS02A0105S	5920		5929	1	5	3/14/06	9:48	15	120	57
ALPHA	SYS02A0106S	5920		5929	1	6	3/14/06	10:02	21	120	79
ALPHA	SYS02A0107S	5920		5929	1	7	3/14/06	10:18	17	120	64
ALPHA	SYS02A0108S	5920		5929	1	8	3/14/06	12:22	8	120	30
ALPHA	SYS02A0109S	5920		5929	1	9	3/14/06	12:29	3	120	11
ALPHA	SYS02A0110S	5920		5929	1	10	3/14/06	12:40	11	120	42
ALPHA	SYS02A0111S	5920		5929	1	11	3/14/06	12:46	3	120	11
ALPHA	SYS02A0112S	5920		5929	1	12	3/14/06	12:58	21	120	79
ALPHA	SYS02A0113S	5920		5929	1	13	3/15/06	7:16	12	120	45
ALPHA	SYS02A0114S	5920		5929	1	14	3/15/06	7:24	6	120	23
ALPHA	SYS02A0115S	5920		5929	1	15	3/15/06	7:32	6	120	23
ALPHA	SYS02A0116S	5920		5929	1	16	3/15/06	7:45	7	120	26
ALPHA	SYS02A0117S	5920		5929	1	17	3/15/06	8:09	24	120	91
ALPHA	SYS02A0118S	5920		5929	1	18	3/15/06	8:17	18	120	68
ALPHA	SYS02A0119S	5920		5929	1	19	3/15/06	8:27	18	120	68
ALPHA	SYS02A0120S	5920		5929	1	20	3/15/06	9:35	255	120	964
ALPHA	SYS02A0121S	5920		5929	1	21	3/15/06	9:47	55	120	208
ALPHA	SYS02A0122S	5920		5929	1	22	3/15/06	9:52	13	120	49
ALPHA	SYS02A0123S	5920		5929	1	23	3/15/06	9:58	52	120	197 ✓
BETA	SYS02A0101S	5920		5929	2	1	3/14/06	8:17	102	60	1012
BETA	SYS02A0102S	5920		5929	2	2	3/14/06	8:26	53	60	526
BETA	SYS02A0103S	5920		5929	2	3	3/14/06	8:37	137	60	1359
BETA	SYS02A0104S	5920		5929	2	4	3/14/06	9:43	109	60	1081
BETA	SYS02A0105S	5920		5929	2	5	3/14/06	9:49	160	60	1587
BETA	SYS02A0106S	5920		5929	2	6	3/14/06	10:03	136	60	1349
BETA	SYS02A0107S	5920		5929	2	7	3/14/06	10:19	114	60	1131
BETA	SYS02A0108S	5920		5929	2	8	3/14/06	12:23	68	60	675
BETA	SYS02A0109S	5920		5929	2	9	3/14/06	12:31	80	60	794
BETA	SYS02A0110S	5920		5929	2	10	3/14/06	12:41	192	60	1905
BETA	SYS02A0111S	5920		5929	2	11	3/14/06	12:47	155	60	1538
BETA	SYS02A0112S	5920		5929	2	12	3/14/06	12:59	199	60	1974
BETA	SYS02A0113S	5920		5929	2	13	3/15/06	7:18	120	60	1190
BETA	SYS02A0114S	5920		5929	2	14	3/15/06	7:25	77	60	764
BETA	SYS02A0115S	5920		5929	2	15	3/15/06	7:33	82	60	813
BETA	SYS02A0116S	5920		5929	2	16	3/15/06	7:46	133	60	1319
BETA	SYS02A0117S	5920		5929	2	17	3/15/06	8:11	163	60	1617
BETA	SYS02A0118S	5920		5929	2	18	3/15/06	8:18	138	60	1369
BETA	SYS02A0119S	5920		5929	2	19	3/15/06	8:28	165	60	1637
BETA	SYS02A0120S	5920		5929	2	20	3/15/06	9:36	133	60	1319

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COPY

SYS-02A -01
 lower static measurement locations

Area: Area 1

Label	Type	Surface	LX	LY
SYS-02A-01-1	Systematic	Wall 4		8 6
SYS-02A-01-2	Systematic	Wall 1		5 6

Area: Area 2

Label	Type	Surface	LX	LY
SYS-02A-01-3	Systematic	Wall 4		6 6
SYS-02A-01-4	Systematic	Wall 3		0 6
SYS-02A-01-5	Systematic	Wall 1		3 6

Area: Area 3

Label	Type	Surface	LX	LY
SYS-02A-01-6	Systematic	Floor		4 2
SYS-02A-01-7	Systematic	Floor		4 26
SYS-02A-01-8	Systematic	Wall 3 VENT		26 2
SYS-02A-01-9	Systematic	Wall 3 VENT		12 2
SYS-02A-01-10	Systematic	Wall 2		6 2
SYS-02A-01-11	Systematic	Wall 1		20 2
SYS-02A-01-12	Systematic	Wall 1		6 2

Area: Area 4

Label	Type	Surface	LX	LY
SYS-02A-01-13	Systematic	Floor		5 5
SYS-02A-01-14	Systematic	Wall 1 VENT		17 1
SYS-02A-01-15	Systematic	Wall 3		5 1
SYS-02A-01-16	Systematic	Wall 4		2 1

Area: area 5

Label	Type	Surface	LX	LY
SYS-02A-01-17	Systematic	Floor		11 1
SYS-02A-01-18	Systematic	Wall 4		22 1
SYS-02A-01-19	Systematic	Wall 4		8 1
SYS-02A-01-20	Systematic	Wall 2 VENT		13 1

Area: Area 6

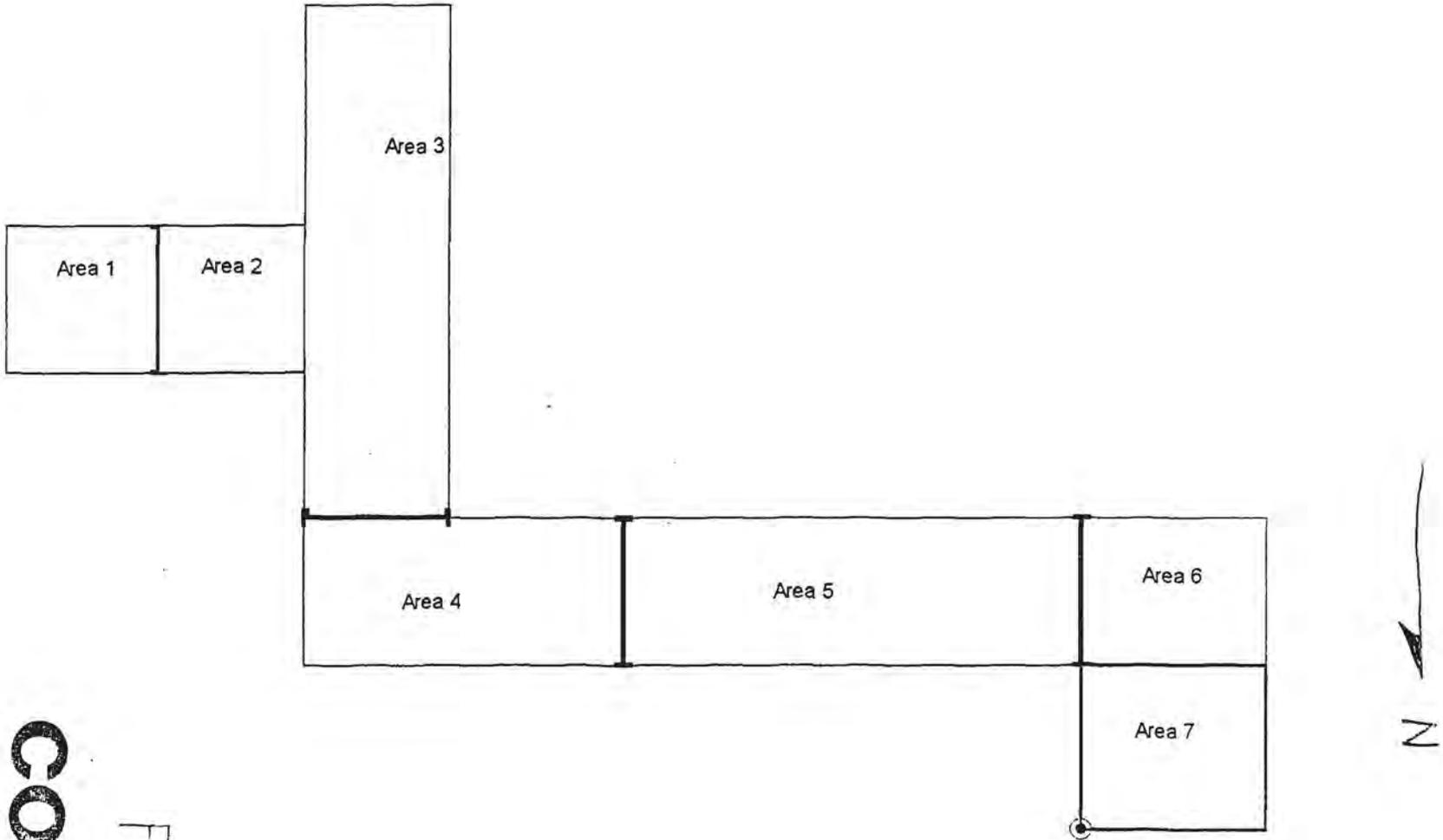
Label	Type	Surface	LX	LY
SYS-02A-01-21	Systematic	Wall 4		8 2
SYS-02A-01-22	Systematic	Wall 3 floor		2 2

Area: Area 7	East half of west headhouse			
Label	Type	Surface	LX	LY
SYS-02A-01-23	Systematic	Floor	4	9

F.7/353

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SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 2 Plan View (laid flat on side)



COPY

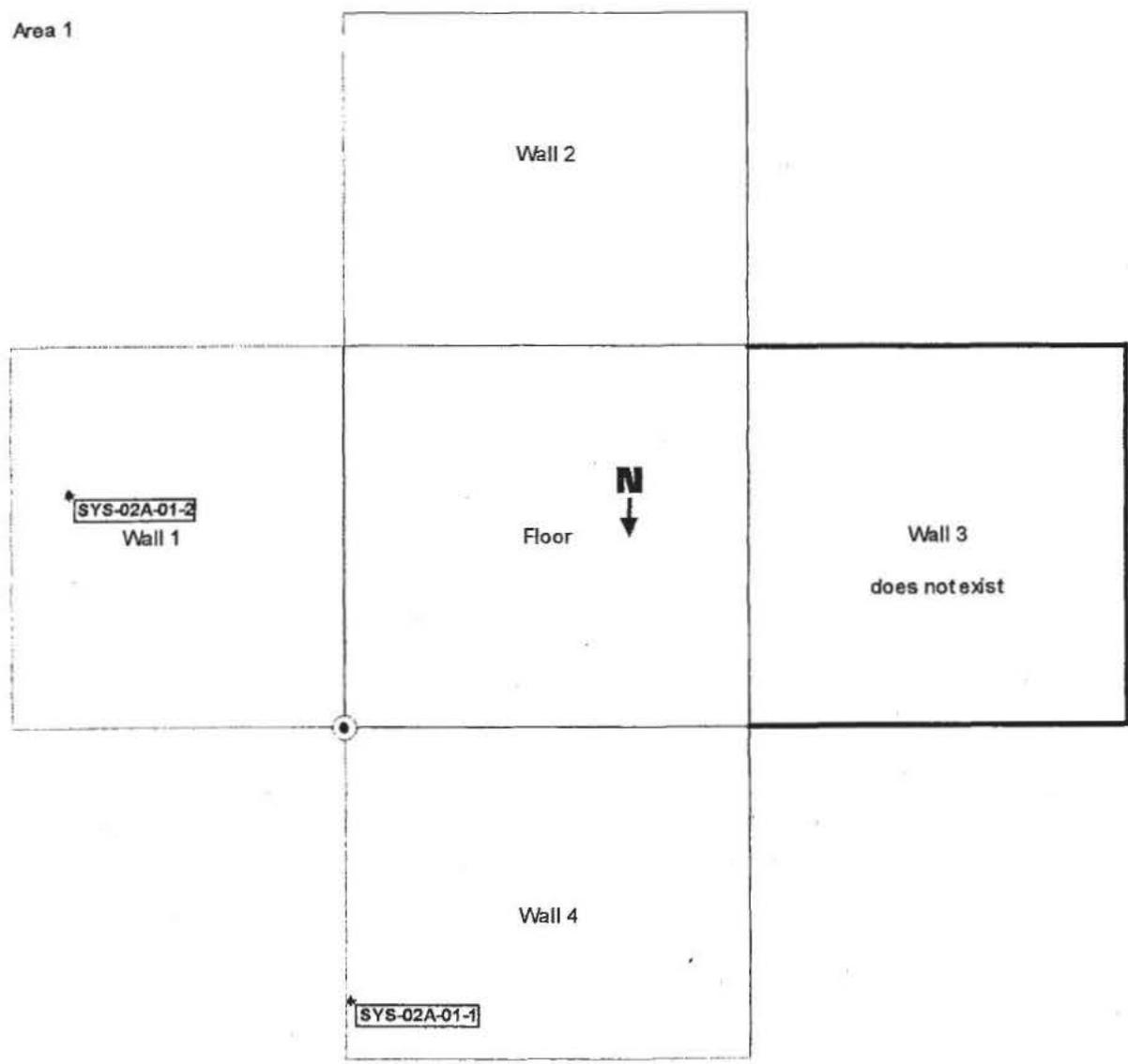
Fig/353

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~ 4.12.11
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MT 06-0308

SYS-02A -01
lower static measurement locations

Area 1

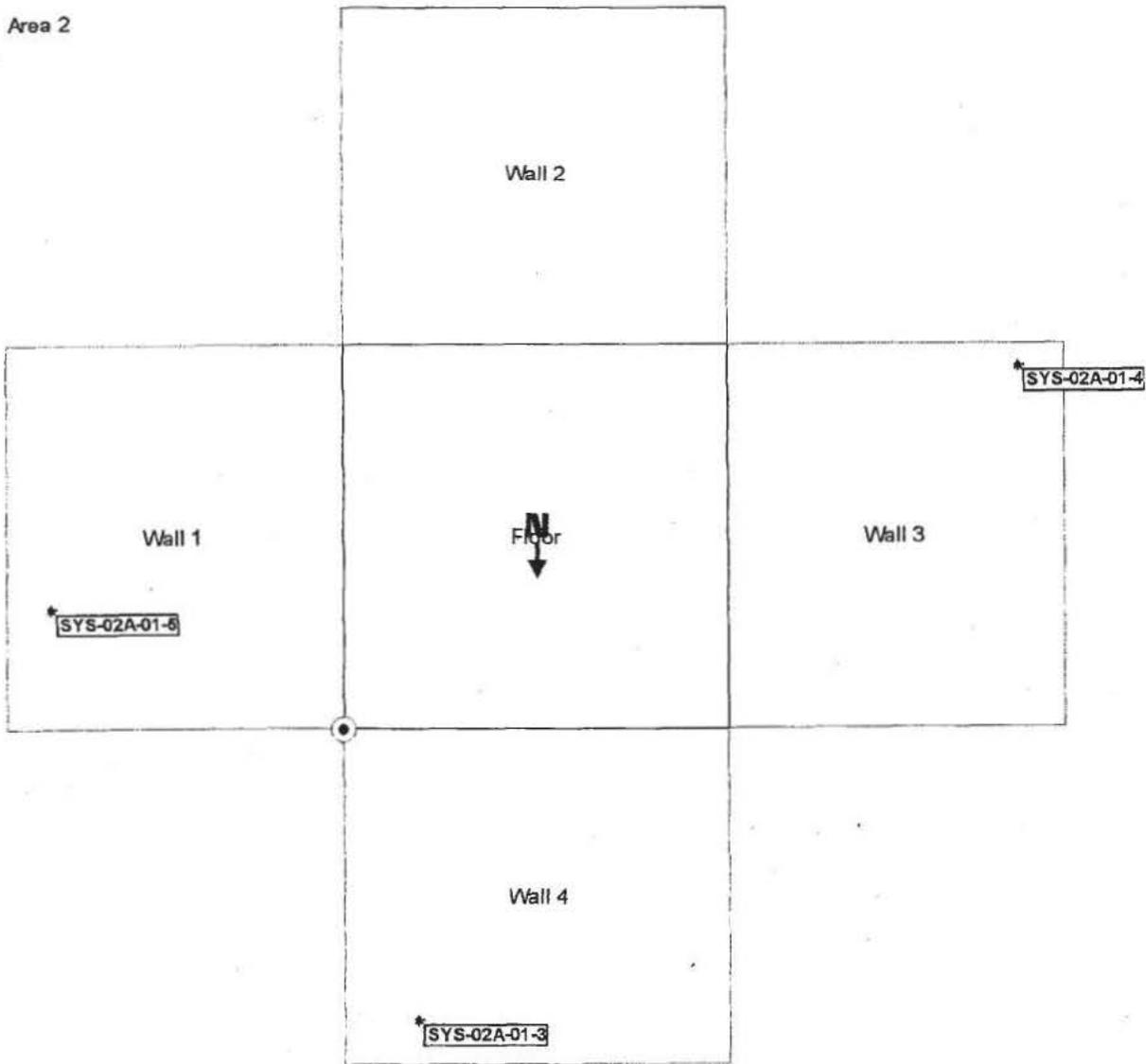


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COPY

SYS-02A -01
lower static measurement locations

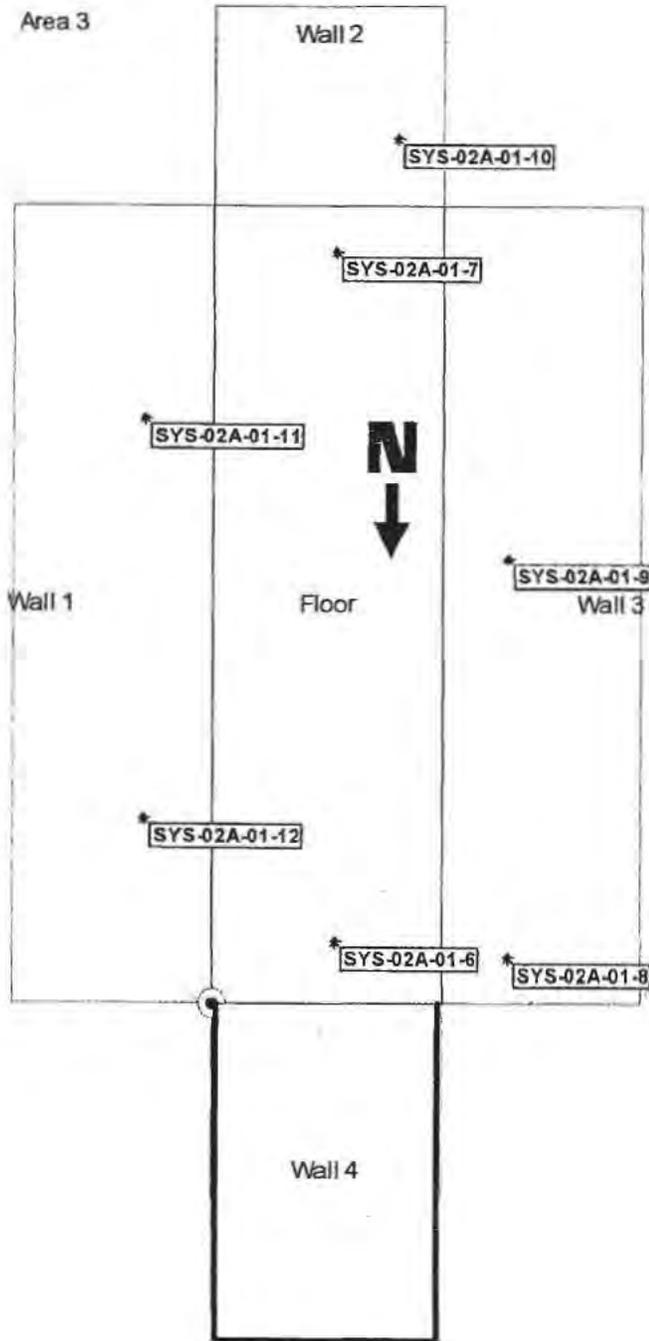
Area 2



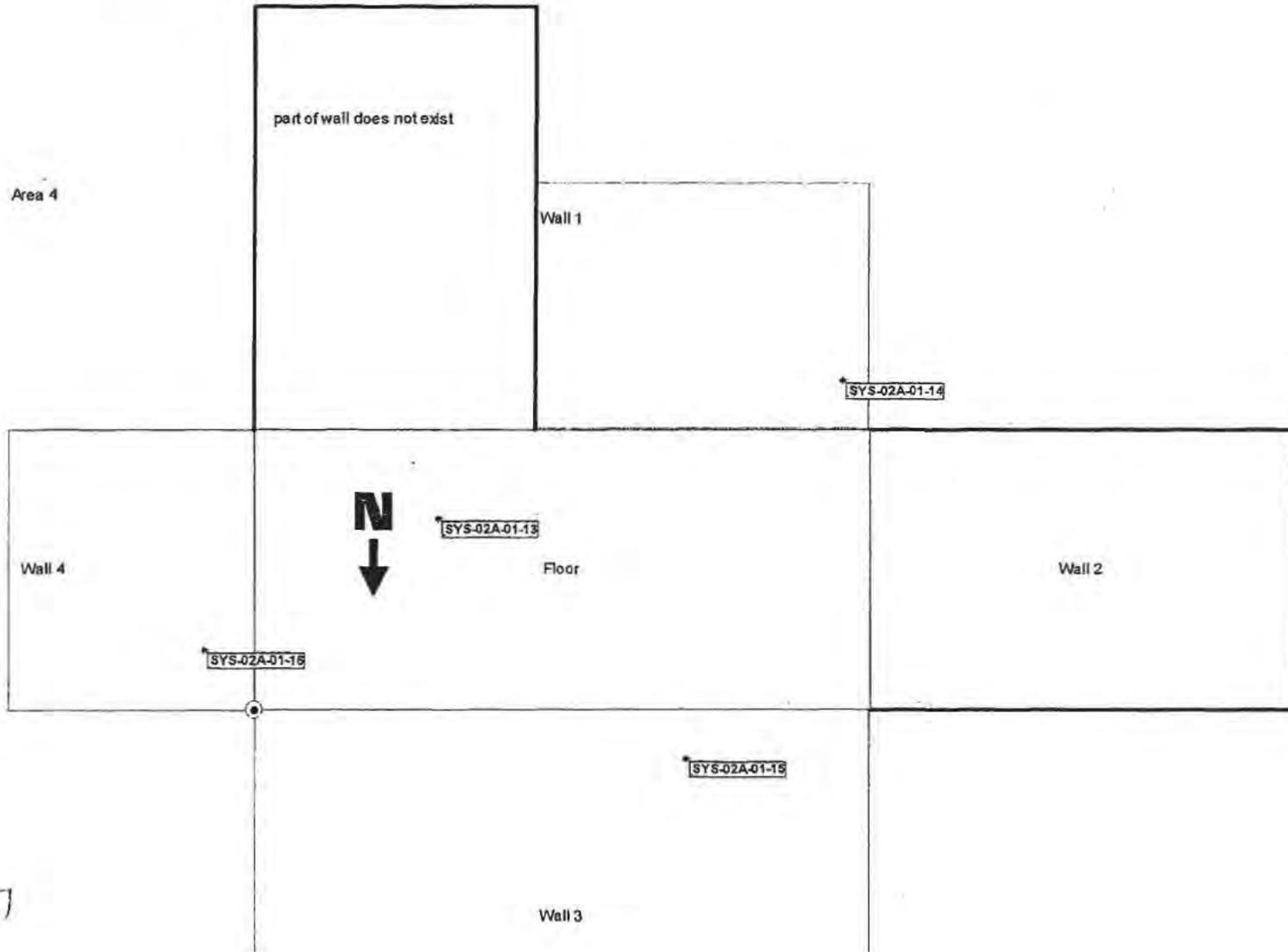
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COPY

SYS-02A -01
lower static measurement locations



SYS-02A -01
lower static measurement locations



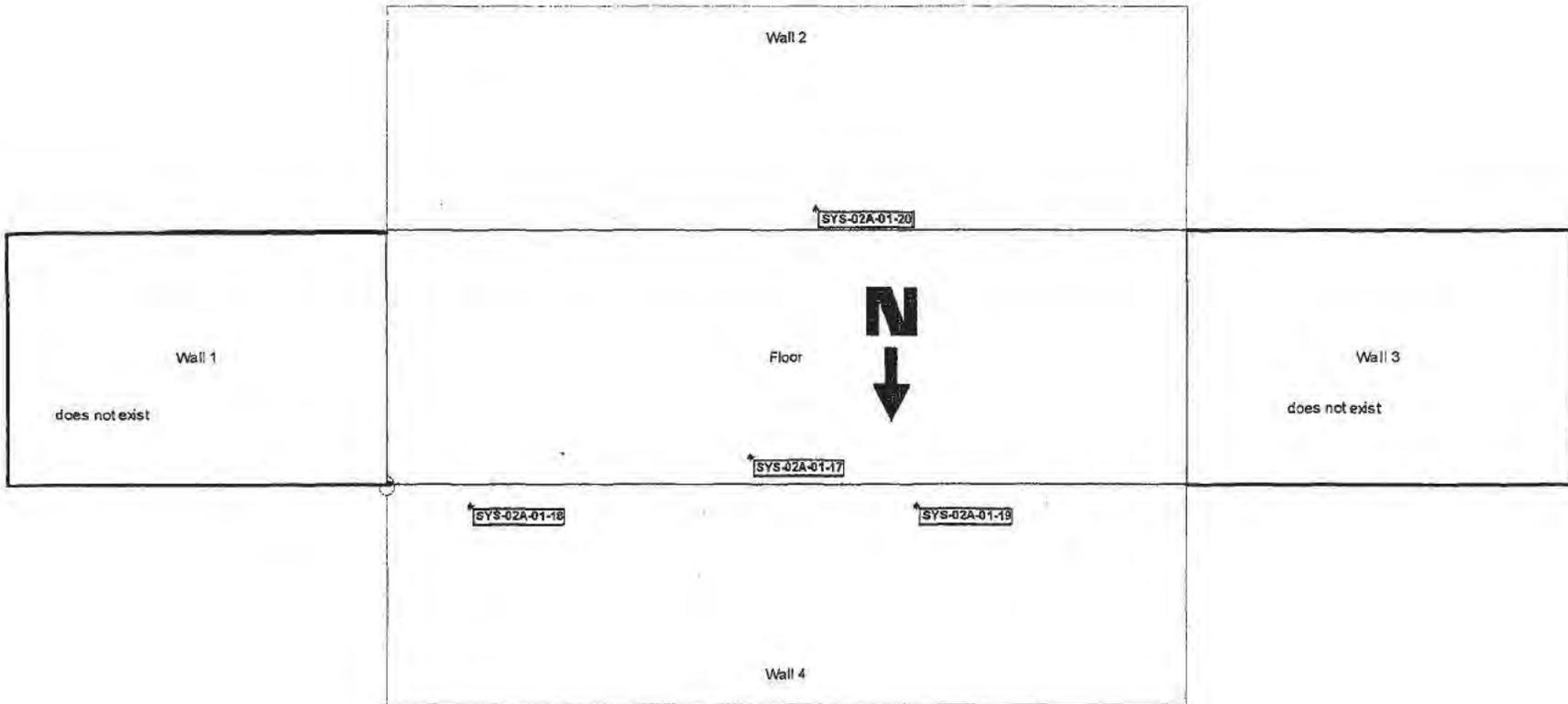
COPY

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SYS-02A-01
lower static measurement locations

area 5

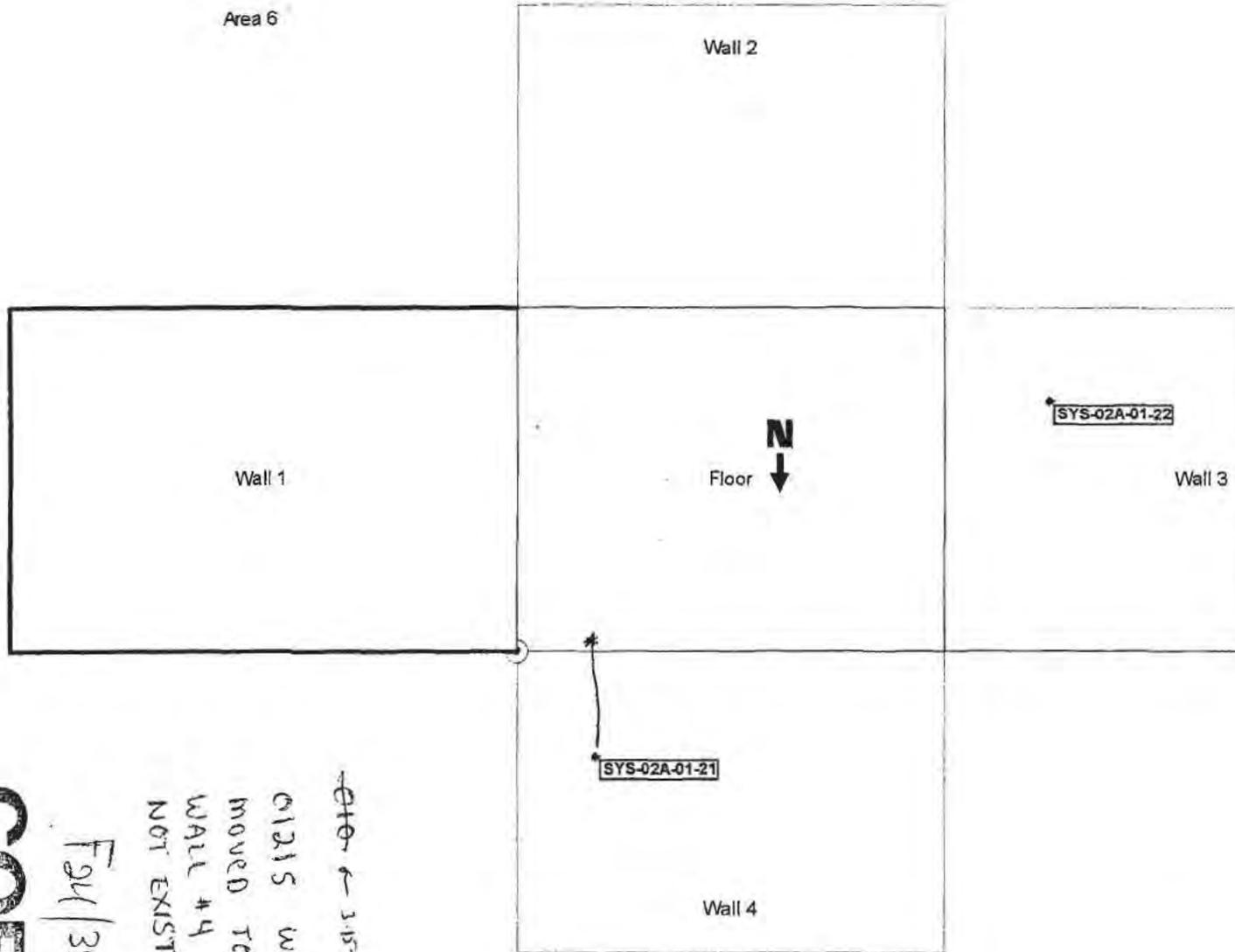


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F23/353

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SYS-02A -01
lower static measurement locations



COPY

Fig 1353

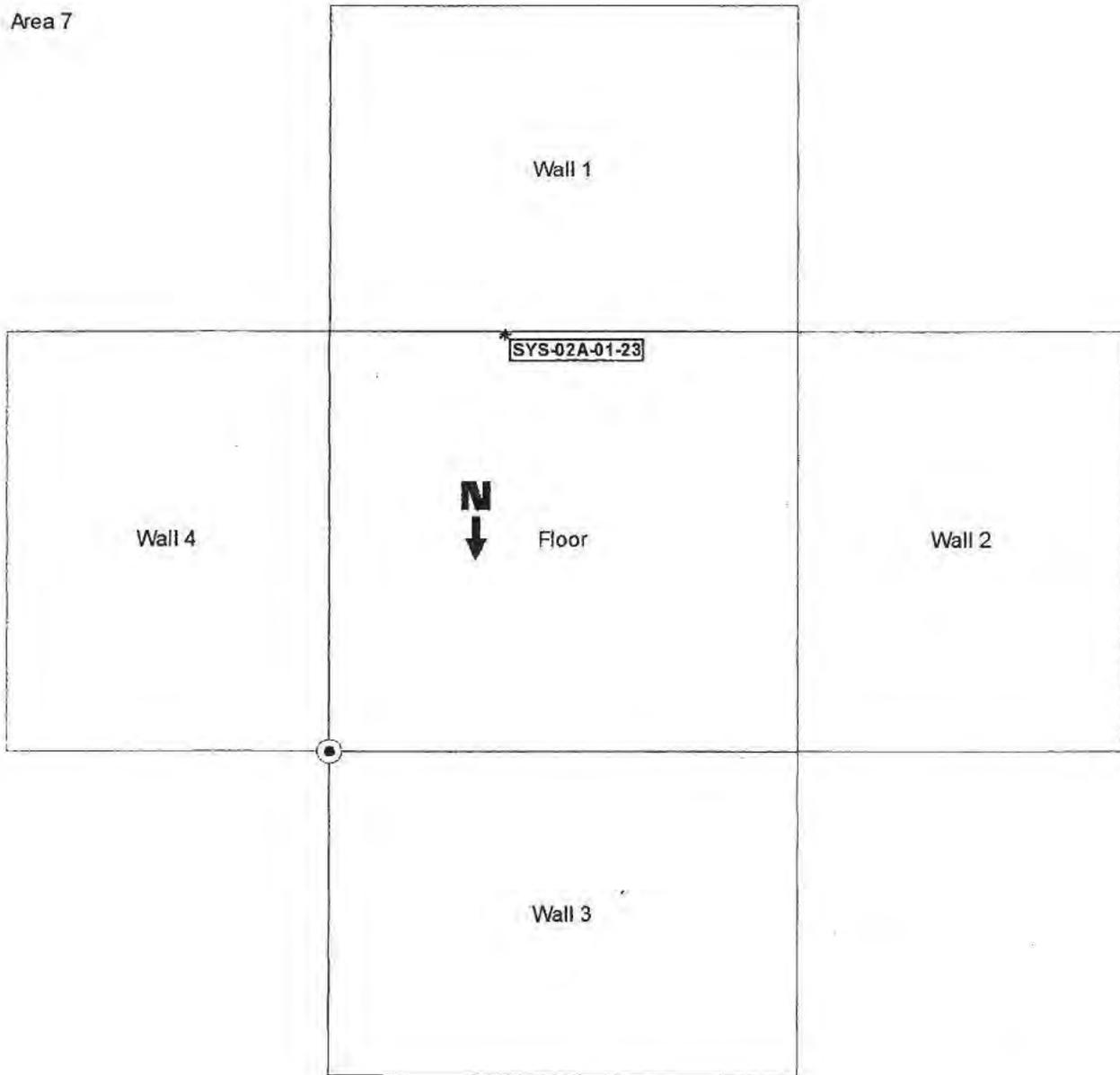
01215 WAS
MOVED TO FLOOR
WALL #4 DOES
NOT EXIST

010 ← 3.15.06

09160 F
MT 06.0308

SYS-02A -01
lower static measurement locations

Area 7



F25/353

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18 of 30
MT-06-0308

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL11130
File ID: 25000130.s0
Priority: Yes

Description\Location

0601160 Sys 02A 99 Crawl Space WEST END
Long Count

Collector:
Date Received: 03/24/06
Date Collected: 03/23/06

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60 *	0	0.06
Cs-137	3.57	0.33
Pb-210	24.9	3.11
Ra-226	31.45	5.3
Ac-227 (D)	5.29	1.59
Th-230 *	0	43.28
Th-232 (D)	1.83	1.3
Pu-238	375	327
Am-241	0.8	0.41

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
<u>Ag-108m</u>	<u>0.01</u>	<u>0.27</u>
<u>Bi-207</u>	<u>0.27</u>	<u>0.2</u>
<u>Bi-210m</u>	<u>0.8</u>	<u>0.28</u>

Σ DOT 0.49 nCi/g

Instrument type: High Purity Germanium

Σ DOT 2nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is Assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation

Comments: U-238d 0 pCi/g 62.63 pCi/g MDA
Pu-238 MDA might be lowered by additional count time if needed.

F26/353

Date: 03/28/06 Counted By: Analyzed By: Initials SB

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STL St. Louis

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MT 06 03 08

**SEVERN
TRENT**

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STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

The Mound Plant
Lot #: F6D070113

Gene Jendrek
CH2M Hill Mound Inc
885 Mound Road
Building 61
Miamisburg, OH 45343

SEVERN TRENT LABORATORIES, INC.

Kay Clay
For: Terry Romanko
Project Manager

April 12, 2006

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Leaders in Environmental Testing

Severn Trent Laboratories, Inc.

LOT# F6D070113

4-18-06
1 of 12

Case Narrative
LOT NUMBER: F6D070113

This report contains the analytical results for the sample received under chain of custody by STL St. Louis on April 7, 2006. This sample is associated with your The Mound Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

There are no observations or nonconformances associated with this sample.

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2 4.11.06
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METHODS SUMMARY

F6D070113

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Isotopic Plutonium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	

References:

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL"
 HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

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SAMPLE SUMMARY

F6D070113

WO #	SAMPLE#	CLIENT	SAMPLE ID	SAMPLED DATE	SAMP TIME
H2RRM	001	0601186	T-99	03/29/06	

NOTE (S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

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CH2M Hill Mound, Inc.

Client Sample ID: 0601186 T-99

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F6D070113-001
Work Order: H2RRM
Matrix: SOLID

Date Collected: 03/29/06 0000
Date Received: 04/07/06 0900

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDC	Prep Date	Analysis Date
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD							
				pCi/g		Batch # 6100468	Yld % 99
Plutonium 238	0.61		0.17	0.20	0.07	04/09/06	04/11/06
Plutonium 239/40	0.028	U	0.035	0.200	0.042	04/09/06	04/11/06
Iso THORIUM (LONG CT) DOE A-01-R MOD							
				pCi/g		Batch # 6100469	Yld % 57
Thorium 228	21.6		3.3	0.2	0.1	04/09/06	04/11/06
Thorium 230	4.34		0.81	0.20	0.08	04/09/06	04/11/06
Thorium 232	22.8		3.4	0.2	0.04	04/09/06	04/11/06

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NOTE(S)

- Data are incomplete without the case narrative.
- DC is determined by instrument performance only.
- Bold results are greater than the MDC
- U Result is less than the sample detection limit.

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CH2M Hill Mound, Inc.

Client Sample ID: 0601186 T-99 DUP

Severn Trent Laboratories - Radiochemistry

Lab Sample ID: F6D070113-001X
Work Order: H2RRM
Matrix: SOLID

Date Collected: 03/29/06 0000
Date Received: 04/07/06 0900

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC	Prep Date	Analysis Date
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD				pCi/g	Batch # 6100468	Yld % 98	
Plutonium 238	0.81		0.20	0.20	0.08	04/09/06	04/11/06
Plutonium 239/40	0.091	J	0.062	0.200	0.046	04/09/06	04/11/06
Iso THORIUM (LONG CT) DOE A-01-R MOD				pCi/g	Batch # 6100469	Yld % 40	
Thorium 228	20.8		3.8	0.2	0.1	04/09/06	04/11/06
Thorium 230	4.34		0.96	0.20	0.1	04/09/06	04/11/06
Thorium 232	23.0		4.1	0.2	0.1	04/09/06	04/11/06

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NOTE(S)

Data are incomplete without the case narrative.

DC is determined by instrument performance only.
J Old results are greater than the MDC

J Result is greater than sample detection limit but less than stated reporting limit.

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METHOD BLANK REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F6D070113
Matrix: SOLID

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	RL	MDC	Prep Date	Analysis Date	Lab Sample ID
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD								
			pCi/g	Batch #	6100468	Yld %	93	F6D100000-468B
Plutonium 238	-0.002	U	0.011	0.100	0.024	04/09/06	04/11/06	
Plutonium 239/40	-0.002	U	0.011	0.100	0.024	04/09/06	04/11/06	
Iso THORIUM (LONG CT) DOE A-01-R MOD								
			pCi/g	Batch #	6100469	Yld %	93	F6D100000-469B
Thorium 228	0.0003	U	0.014	0.100	0.030	04/09/06	04/11/06	
Thorium 230	0.005	U	0.014	0.100	0.013	04/09/06	04/11/06	
Thorium 232	-0.0009	U	0.011	0.100	0.021	04/09/06	04/11/06	

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NOTE(S)

- Data are incomplete without the case narrative.
- MDC is determined using instrument performance only
- Bold results are greater than the MDC
- U Result is less than the sample detection limit.

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Laboratory Control Sample Report

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F6D070113
 Matrix: SOLID

Parameter	Spike Amount	Result	Total Uncert. (2σ+/-)	MDC	% Yld	% Rec	Lab Sample ID	QC Control Limits
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD			pCi/g	A-01-R MOD			F6D100000-468C	
Plutonium 238	1.53	1.38	0.22	0.03	102	90		(74 - 124)
Plutonium 239/40	1.44	1.28	0.21	0.01	102	89		(75 - 120)
	Batch #:	6100468		Analysis Date:	04/11/06			
Iso THORIUM (LONG CT) DOE A-01-R MOD			pCi/g	A-01-R MOD			F6D100000-469C	
Thorium 230	58.5	54.3	5.9	0.3	101	93		(73 - 120)
	Batch #:	6100469		Analysis Date:	04/11/06			

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NOTE(S)

MDC is determined by instrument performance only
 Calculations are performed before rounding to avoid round-off error in calculated results

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DUPLICATE EVALUATION REPORT

Severn Trent Laboratories - Radiochemistry

Client Lot ID: F6D070113
Matrix: SOLID

Date Sampled: 03/29/06
Date Received: 04/07/06

Parameter	SAMPLE Result	Total Uncert. (2σ +/-)	% Yld	DUPLICATE Result	Total Uncert. (2σ +/-)	% Yld	QC Sample ID	
							Precision	
Iso PLUTONIUM (LONG CT) DOE A-01-R MOD							F6D070113-001	
		pCi/g		A-01-R MOD				
Plutonium 238	0.61	0.17	99	0.81	0.20	98	28	%RPD
Plutonium 239/40	0.028 U	0.035	99	0.091 J	0.062	98	107	%RPD
	Batch #:	6100468 (Sample)		6100468 (Duplicate)				
Iso THORIUM (LONG CT) DOE A-01-R MOD							F6D070113-001	
		pCi/g		A-01-R MOD				
Thorium 228	21.6	3.3	57	20.8	3.8	40	4	%RPD
Thorium 230	4.34	0.81	57	4.34	0.96	40	0.05	%RPD
Thorium 232	22.8	3.4	57	23.0	4.1	40	0.9	%RPD
	Batch #:	6100469 (Sample)		6100469 (Duplicate)				

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

- J Result is greater than sample detection limit but less than stated reporting limit.
- U Result is less than the sample detection limit.

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Lot #(s): F6D070113

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m-06-0308

- 1435 -

Client: CH2A Hill, Mound COC/RFA No: N/A Condition Upon Receipt Form Date: 04-07-06
Quote No: 39107 Initiated By: N.M Time: 0900

Shipping Information

Shipper Name: Fedex
Shipping # (s):*
1. 7908 7630 4041 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

Multiple Packages Y N/A
Sample Temperature (s):**
1. ambient 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y <input checked="" type="radio"/>	Was sample received broken?	8.	Y <input checked="" type="radio"/> N	Sample received with Chain of Custody?
2.	Y N <input checked="" type="radio"/> N/A	Was sample received with proper pH? (If not, make note below)	9.	Y <input checked="" type="radio"/> N	Chain of Custody matches sample ID's on container(s)?
3.	Y <input checked="" type="radio"/>	If N/A-Was pH taken by original STL Lab?	10.	Y <input checked="" type="radio"/> N	Are there custody seals present on cooler?
4.	Y <input checked="" type="radio"/> N	Sample received in proper containers?	11.	Y N <input checked="" type="radio"/> N/A	Do custody seals on cooler appear to be tampered with?
5.	Y <input checked="" type="radio"/> N	Sample volume sufficient for analysis?	12.	Y <input checked="" type="radio"/>	Are there custody seals present on bottles?
6.	Y N <input checked="" type="radio"/> N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)	13.	Y N <input checked="" type="radio"/> N/A	Do custody seals on bottles appear to be tampered with?
7.	Y <input checked="" type="radio"/> N	Were contents of the cooler were frisked after opening	14.	Y <input checked="" type="radio"/>	Was Internal COC/Workshare received?

¹ For DOB-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

Corrective Action:

- Client Contact Name: _____
- Sample(s) processed "as is"
- Sample(s) on hold until: _____

Informed by: _____

If released, notify: _____ Date: 04-07-06

Project Management Review: [Signature]

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	J-BLDG 99 CRAWLSPACE	SURVEY NO.	MT-06-0362
PURPOSE:	6/19/06 DRAINS, VENTS, AND UT'S	RWP NO.	N/A
	SYSO2A DOSE RATE SURVEY	DATE:	3-28-06
		TIME:	0900

MAP / DRAWING

SEE ATTACHED.

THIS SURVEY IS A RECD OF RSDS
MT-06-0304 WHICH WAS DONE
before ~~ATTA~~ SURVEY UNIT WAS SPLIT
5.24

ONLY DRAIN (NO VENT + UT IS IN
AREA * 2) SEE RSDS MT-06-0567 DUU

BACKGROUND DOSE RATE : 5 μ m/hr
MAXIMUM DOSE RATE : 5 μ m/hr

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr ($\beta + \gamma$) extremity on contact
K = factor of 1000
----- = radiological boundary

\triangle # = mrem/hr neutron # = swipe number
= air sample number #/alpha or #/beta = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06
micromm	1486	5/13/06
	N	
	A	

Completed by: (Signature)	<i>[Signature]</i>	Date:	3-28-06
Completed by: (Print Name)	SKILLARDSON G. HODGES		
Counted by: (Signature)	SEE ATTACHED	HR#	N/A
Counted by: (Print Name)	SHUTS		
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	3/30/06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

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Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060328_0917.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0362.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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RW

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MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
3/28/06	9:18:30 AM	-1		10.00	8	7	9	7	603.74	0	22.3	B	1
3/28/06	9:29:20 AM	0		2.00	294	279	2	0	536.35	573	8.4		1
3/28/06	9:32:03 AM	1		2.00	36	33	7	13	577.13	69	26.3		1

✓

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MT-06-0362

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_079
Batch Ended: 3/28/06 8:45
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0362 [1] RICHARDSON 3-28-06 RLH ✓

Detector ID	Sample ID
BI	1

Alpha Activity		
DPM	σ	flags
0.00	1.89	

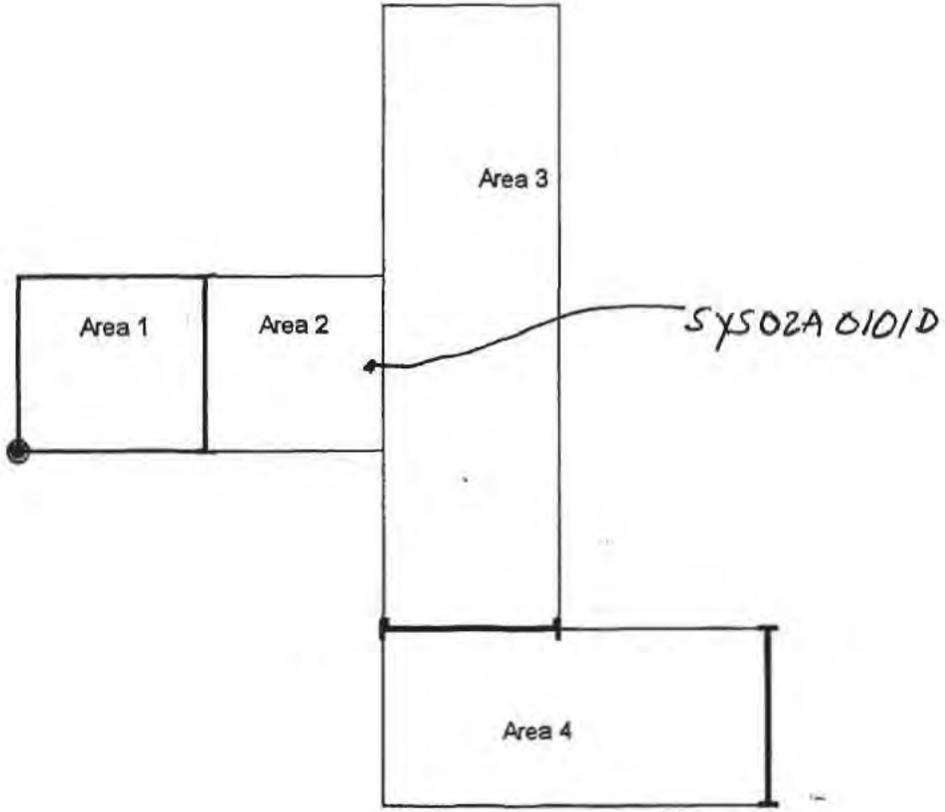
Beta Activity		
DPM	σ	flags
0.25	1.68	

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RLH

SYS-02A Drains, vents, and utilities
Class 2



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MT-06-0362

RADIOLOGICAL SURVEY DATA SHEET

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LOCATION: (BLDG./AREA/ROOM) <u>T Bldg T99 crawlspace</u>	SURVEY NO. <u>MT-06-0363</u>
PURPOSE: <u>MARSSIM - Judgemental measurements</u> <u>Unit 84502A</u>	RWP NO. <u>NA</u>
	DATE: <u>4-6-06</u>
	TIME: <u>0830</u>

MAP/DRAWING

*upper wall areas inaccessible or unsafe to measure.
see attached sheets for results & locations.*

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LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact

\triangle # = mrem/hr neutron

\odot # = swipe number

\square # = air sample number

\odot/α or β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<u>2350-1</u>	<u>59285929</u>	<u>11-15-06</u>
<u>N</u>		
<u>A</u>		

Completed by: (Signature) <u>[Signature]</u>	Date: <u>7-12-06</u>
Completed by: (Print Name) <u>George Hodges, Jackie Jones, Allen Hill</u>	
Counted by: (Signature) <u>see</u>	HP# <u>N/A</u> Date: <u>N/A</u>
Counted by: (Print Name) <u>attached sheets F47/353</u>	
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>4/12/06</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	see	attached	sheets	0101J
2				0102J
3				0103J
4				0104J
5				0105J
6				0106J
7				0107J
8				0108J
9				0109J
10				0110J
11				0111J
12				0112J
13				0113J
14				0114J
15				0115J
16				0116J
17				0117J
18				0118J
19				0119J
20	↓	↓	↓	0120J
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
N/A				

COMMENTS:

N/A

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NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

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Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\TriCarb\Results\5801\MARSSIM_Smear_1\20060413_0953.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0363.001 ✓
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tsIE	DPMI	A:2S%	MESSAGES	P#
4/13/06	9:53:48 AM	-1		10.00	9	9	13	7	607.57	0	21.2	B	1
4/13/06	10:04:38 AM	0		2.00	284	268	0	0	531.35	557	8.5		1
4/13/06	10:07:21 AM	1		2.00	28	27	0	8	509.31	55	31.7		1
4/13/06	10:10:03 AM	2		2.00	48	42	0	10	526.38	95	22.5		1
4/13/06	10:12:46 AM	3		2.00	98	87	3	2	471.91	203	15.1		1
4/13/06	10:15:28 AM	4		2.00	159	144	0	4	439.71	345	11.6		1
4/13/06	10:18:10 AM	5		2.00	3	3	0	0	635.53	6	170.5		1
4/13/06	10:20:52 AM	6		2.00	93	89	21	0	534.64	183	15.4		1
4/13/06	10:23:34 AM	7		2.00	12	9	0	0	569.99	22	57.4		1
4/13/06	10:26:17 AM	8		2.00	22	20	1	7	476.95	45	37.2		1
4/13/06	10:28:59 AM	9		2.00	9	9	0	0	611.86	17	68.9		1
4/13/06	10:31:42 AM	10		2.00	23	22	0	3	573.48	44	35.3		1
4/13/06	10:34:25 AM	11		2.00	157	138	7	0	578.22	296	11.7		1
4/13/06	10:37:08 AM	12		2.00	102	92	0	2	528.14	200	14.7		1
4/13/06	10:39:50 AM	13		2.00	76	66	0	2	545.37	147	17.4		1
4/13/06	10:42:32 AM	14		2.00	469	427	0	1	546.06	909	6.6		1
4/13/06	10:45:13 AM	15		2.00	63	58	6	1	506.31	126	19.3		1
4/13/06	10:47:56 AM	16		2.00	62	56	0	1	519.49	123	19.4		1
4/13/06	10:50:43 AM	17		2.00	73	62	0	8	525.99	144	17.7		1
4/13/06	10:53:25 AM	18		2.00	40	35	0	10	561.16	76	25.3		1
4/13/06	10:56:07 AM	19		2.00	73	66	0	7	528.73	143	17.7		1
4/13/06	10:58:49 AM	20		2.00	45	41	0	2	571.54	85	23.5		1

John

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MT-06-0363

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Ad

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_010
 Batch Ended: 4/13/06 9:06
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

GH
 Batch ID: MT-06-0363 HODGES (20) AG ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.23		2.98	2.62	
A2	2	0.00	2.00		0.00	1.17	
A3	3	0.00	2.26		0.00	1.26	
A4	4	0.00	2.13		1.78	2.09	
B1	5	0.00	1.89		0.25	1.68	
B2	6	0.00	1.91		2.71	2.23	
B3	7	1.91	2.22		1.37	2.30	
B4	8	0.00	1.95		0.00	1.20	
C1	9	0.00	2.08		0.00	1.78	
C2	10	3.52	2.72		0.00	1.16	
C3	11	0.00	2.15		1.71	2.19	
C4	12	0.00	1.98		0.00	1.14	
D1	13	0.00	2.07		1.53	2.17	
D2	14	0.00	2.15		0.00	1.20	
D3	15	0.00	2.09		0.00	1.25	
D4	16	0.00	2.04		0.00	1.18	
A1	17	0.00	2.18		0.00	1.31	
A2	18	0.00	2.00		0.00	1.17	
A3	19	2.01	2.30		1.37	2.18	
A4	✓ 20	0.00	2.13		1.78	2.09	

GH

GH

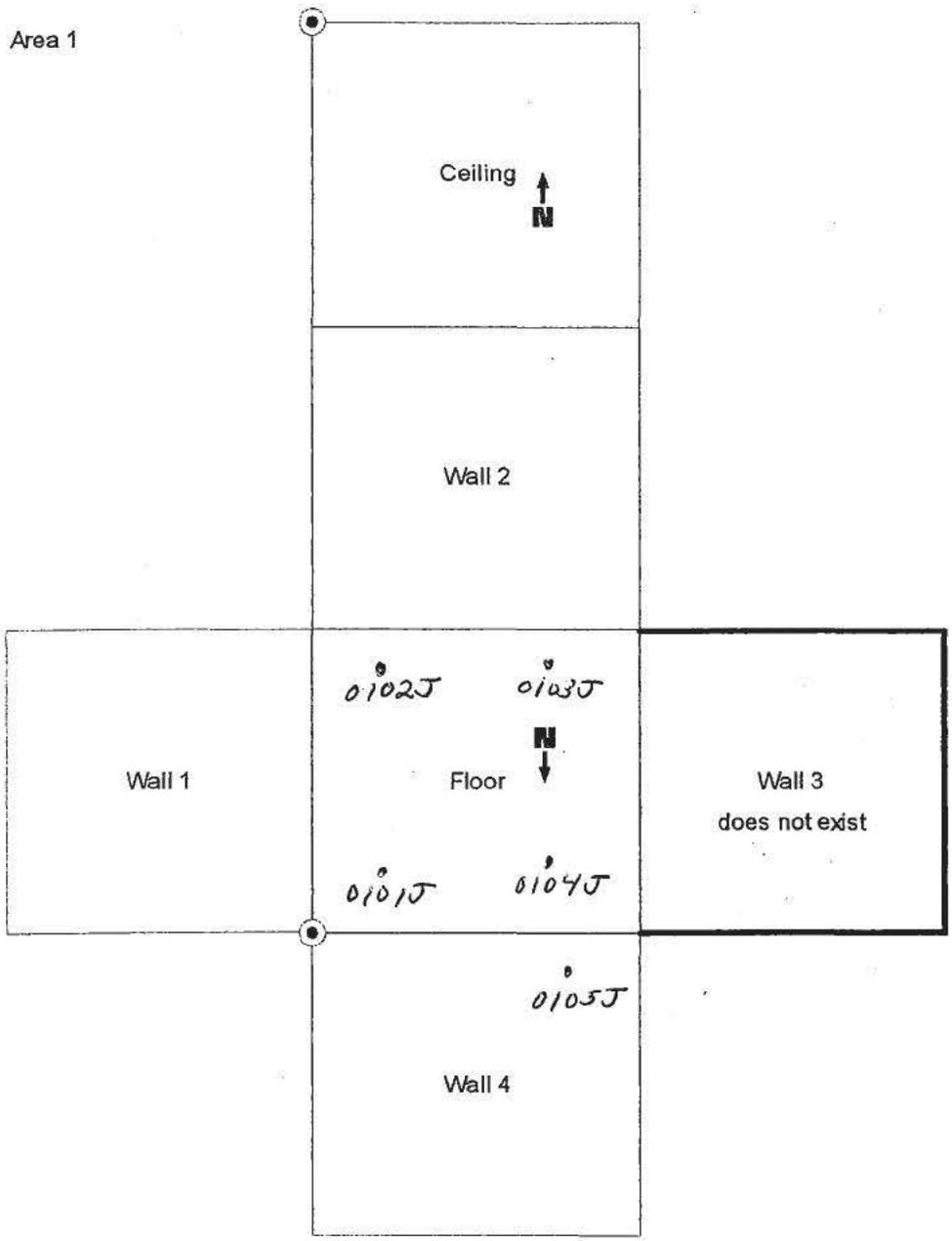
COPY
FS1/353

GH 4-18-06
 Page 4 of 4

5 of 11

As

SYS-02A judgmentals

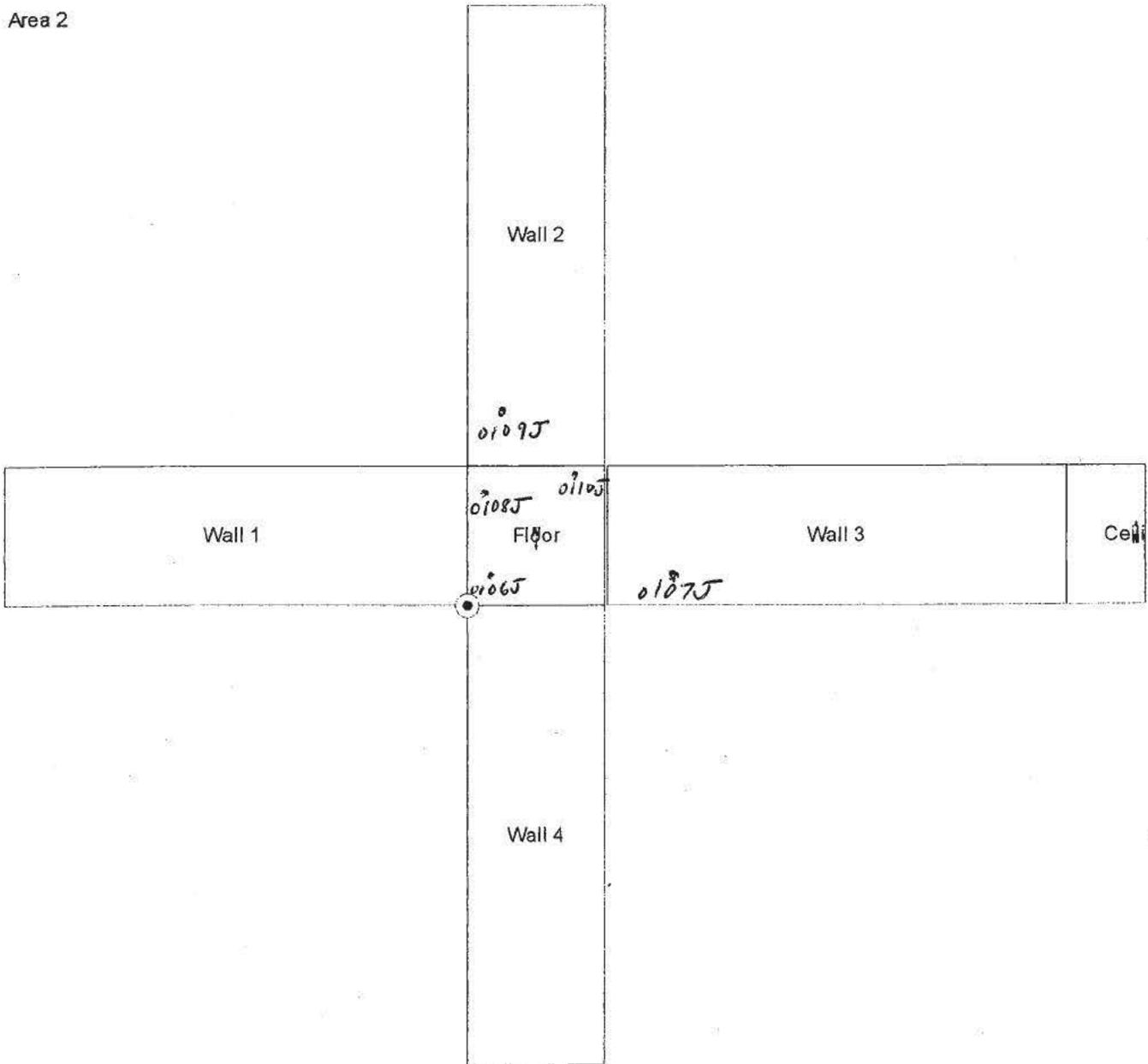


COPY

FS4/353

SYS-02A judgmentals

Area 2



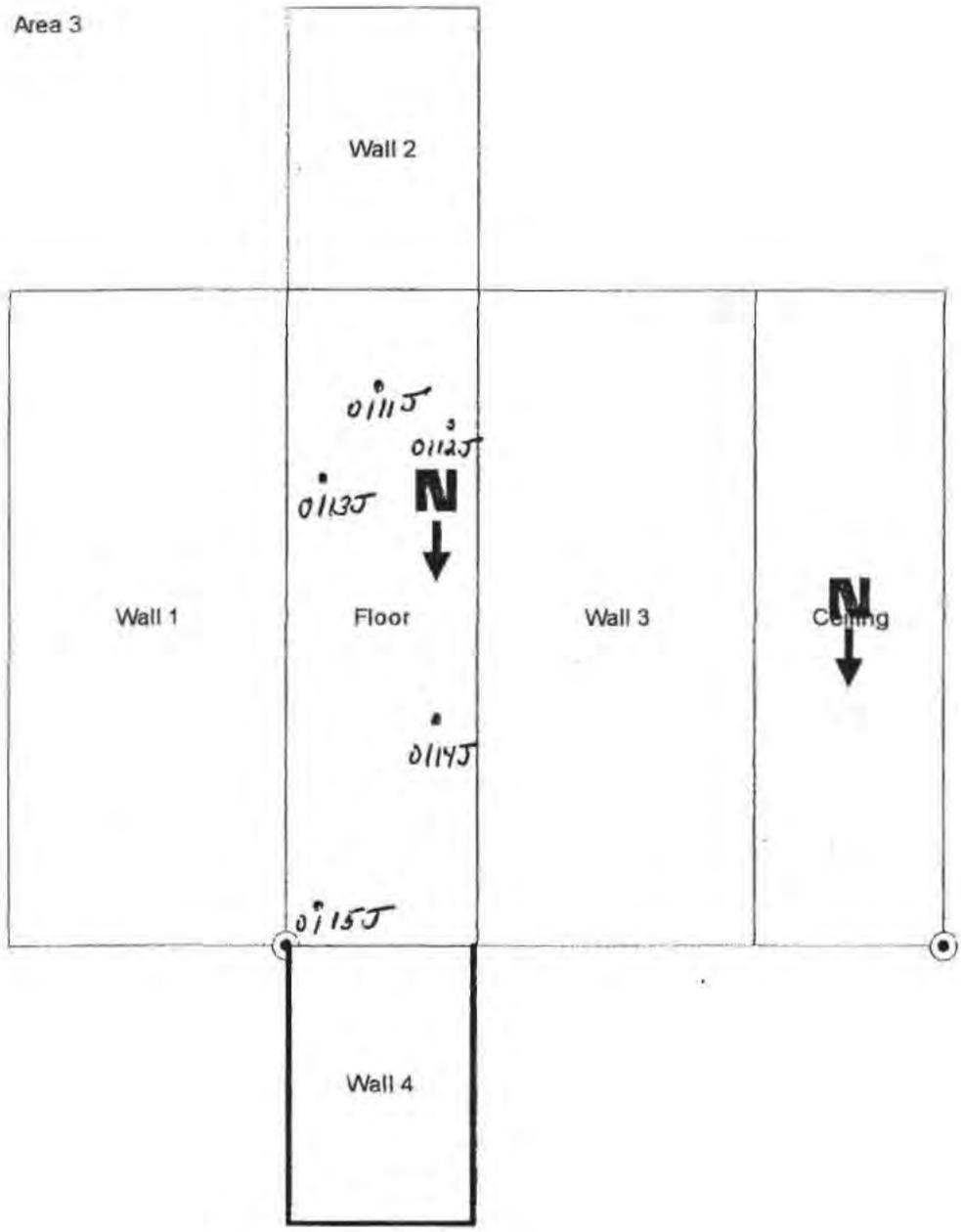
COPY

F 54/353

MT-06-0363

SYS-02A judgmentals

Area 3

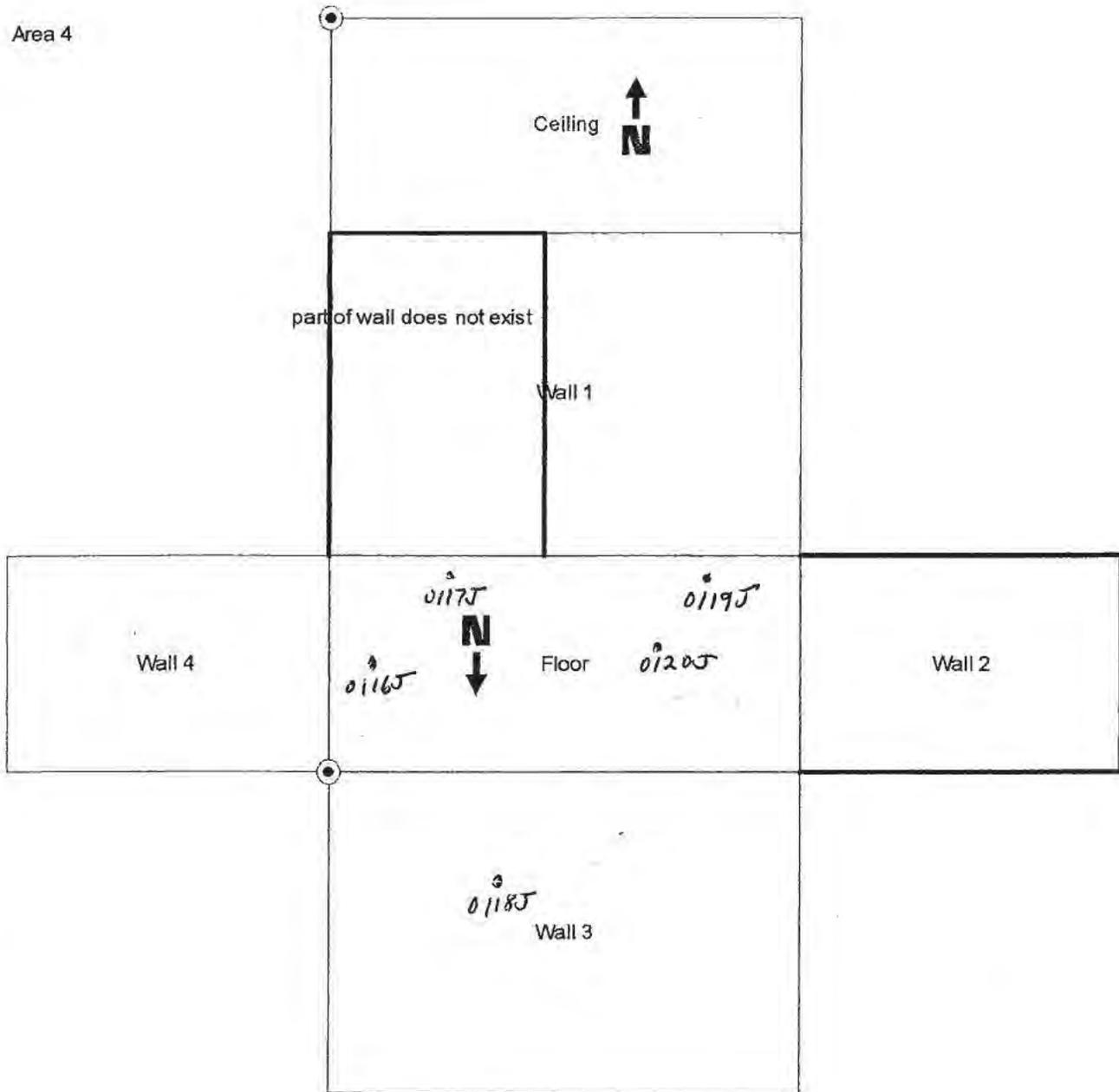


COPY

F55/353

SYS-02A judgmentals

Area 4



COPY

FS6/353

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of ¹⁸ ~~10~~ ^{6/22/06} ~~10/11/06~~

LOCATION: (BLDG./AREA/ROOM) T BLDG 99 CRAWSPACE	SURVEY NO. MT-06-0504
PURPOSE: Follow up to SCM SPOTS SCM scan of FLOORS/WALLS SV502A	RWP NO. N/A
	DATE: 5/9/06
	TIME: 1400

MAP / DRAWING

SCM 23 SCAN 100% FLOOR α/β
 SCM 23 SCAN 100% WALLS UP TO 7' α/β
 POTENTIAL ELEVATED READINGS DETECTED DURING SCAN
 RESRAD AREA ALL ELEVATED READINGS ON FLOOR NO FURTHER REMEDIATION REQUIRED
 Scanned 25% of upper walls for α/β
 no elevated readings detected during scan

See attached map

SCM summary sheet attached

INSTRUMENT	SERIAL#	CAL. DUE DATE
SCM 23	R-180	6-1-06
SCM 23	C-180	6-1-06 ✓

COPY

LEGEND:
 # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
 # = air sample number #/a or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06 ✓
 	 	
 	 	

Completed by: (Signature) <i>Wayne Jones</i>	Date: 5/9/06
Completed by: (Print Name) Wayne Jones	George S. Hodges
Counted by: (Signature) <i>See attached</i>	HP# N/A Date: N/A
Counted by: (Print Name) 	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: 5-11-06
Reviewed/Approved by: (Print Name) Jerry Taylor	FS7/353

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
1	All attached			SYS02A0101I
2				SYS02A0102I
3				SYS02A0103I
4				SYS02A0104I
5				SYS02A0105I
6				SYS02A0106I
7				SYS02A0107I
8				SYS02A0108I
9				SYS02A0109I
10				SYS02A0110I
11				SYS02A0111I
12				SYS02A0112I
13				SYS02A0113I
14				SYS02A0114I
15				SYS02A0115I
16				SYS02A0116I
17				SYS02A0117I
18				SYS02A0118I
/				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
/				

COMMENTS: N/A COPY

- NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
 2. To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
 3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. (If not needed, mark N/A.)

COPY

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_085
Batch Ended: 5/9/06 16:21
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0504 W.JONES (18) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.26		5.59	3.21	
A2	2	0.00	2.03		1.52	2.02	
A3	3	0.00	2.28		0.30	1.78	
A4	4	0.00	2.14		2.99	2.42	
B1	5	0.00	1.87		0.00	1.20	
B2	6	0.00	1.87		0.48	1.58	
B3	7	0.00	2.20		0.27	1.88	
B4	8	0.00	1.99		1.85	2.07	
C1	9	1.73	2.07		0.00	1.27	
C2	10	1.61	1.94		0.32	1.63	
C3	11	0.00	2.14		0.45	1.79	
C4	12	0.00	1.98		0.00	1.14	
D1	13	1.74	2.05		0.00	1.26	
D2	14	1.93	2.20		2.55	2.39	
D3	15	0.00	2.10		0.26	1.76	
D4	16	0.00	2.05		0.40	1.66	
A1	17	0.00	2.20		0.38	1.85	
A2	✓18	0.00	2.01		0.36	1.65	

wj

wj

MT-06-0504 WJ
302 Ed
4050-90-1W
8/17/06

F59/353

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060509_1725.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0504.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY

MT-06-0504

Page 0/353

5/10/06

PL

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/9/06	5:26:31 PM	-1	10.00		12	11	12	10	607.64	0	18.3	B	1
5/9/06	5:37:20 PM	0	2.00		261	252	0	0	530.93	512	9.0		1
5/9/06	5:40:03 PM	1	2.00		22	19	0	17	520.21	43	39.1		1
5/9/06	5:42:46 PM	2	2.00		23	19	1	7	522.32	44	38.2		1
5/9/06	5:45:30 PM	3	2.00		67	59	0	2	552.52	129	19.0		1
5/9/06	5:48:13 PM	4	2.00		13	12	2	4	535.69	24	58.6		1
5/9/06	5:50:57 PM	5	2.00		7	7	0	5	507.14	13	99.3		1
5/9/06	5:53:40 PM	6	2.00		39	34	0	13	458.84	82	26.5		1
5/9/06	5:56:24 PM	7	2.00		30	23	2	20	537.33	59	31.2		1
5/9/06	5:59:06 PM	8	2.00		3	3	0	3	587.53	5	231.7		1
5/9/06	6:01:48 PM	9	2.00		14	14	0	0	588.34	26	53.8		1
5/9/06	6:04:31 PM	10	2.00		4	4	3	6	579.95	8	151.3		1
5/9/06	6:07:14 PM	11	2.00		0	0	1	0	610.58	0	0.0		1
5/9/06	6:09:57 PM	12	2.00		1	2	0	0	476.03	2	708.3		1
5/9/06	6:12:39 PM	13	2.00		12	11	0	0	567.59	22	62.5		1
5/9/06	6:15:23 PM	14	2.00		53	53	0	1	531.52	104	21.8		1
5/9/06	6:18:06 PM	15	2.00		15	13	0	4	486.48	30	52.4		1
5/9/06	6:20:50 PM	16	2.00		34	31	2	2	469.22	70	29.2		1
5/9/06	6:23:56 PM	17	2.00		4	4	0	3	623.73	7	151.3		1
5/9/06	6:26:39 PM	✓18	2.00		6	5	0	0	546.03	12	107.1		1

log

COPY

pg 50761
6/15/06
MAT-06-0504

F61/353

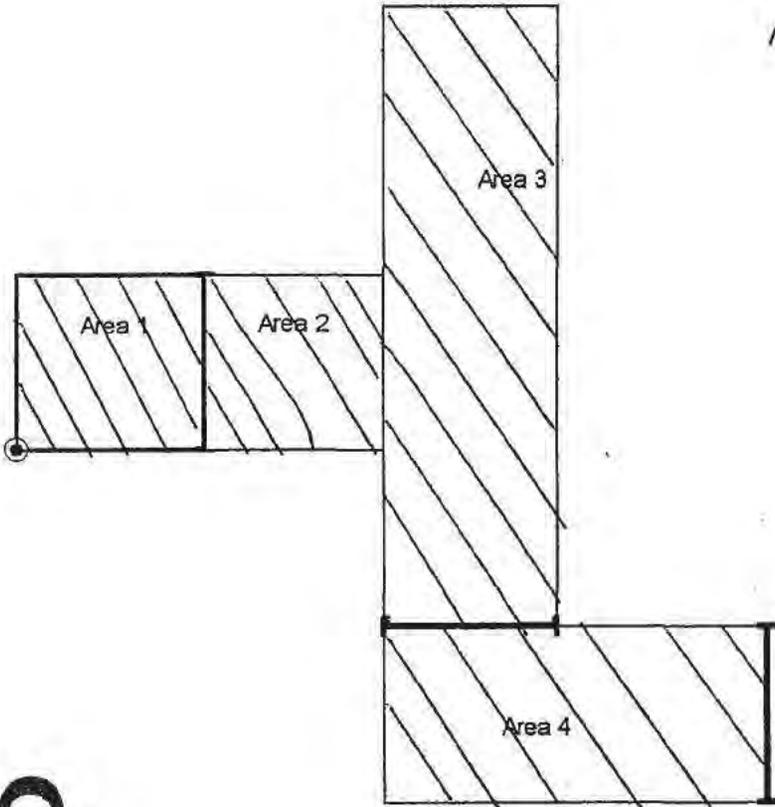
SYS-02A T99 through brickwall to East part of the West Headhouse airshaft

Class 2 Scan 100% of floor and accessible walls < 2 meters

~~Scan 25% of accessible walls > 2 meters~~ w/ 6/15/06

Floors only

 = SHONKA SURVEY
SCM 23 C-180 6-1-06



COPY

6/3/353

MT-06-0504
Pg 6 of 18
6-22-06
AH

SHONKA SURVEY = 

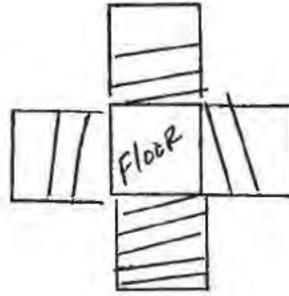
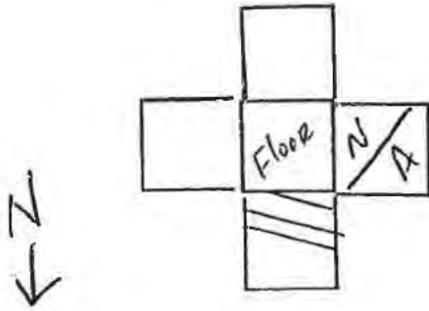
SCM 23 C-180 6-1-06

MT-CG-0504
Pg 7 of 14
6-22-06

AREA 1 WALLS

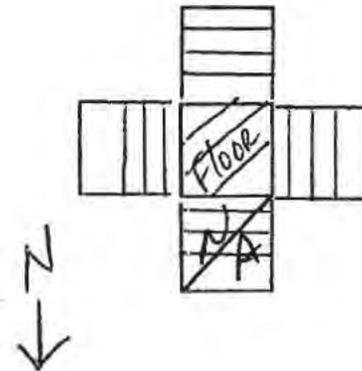
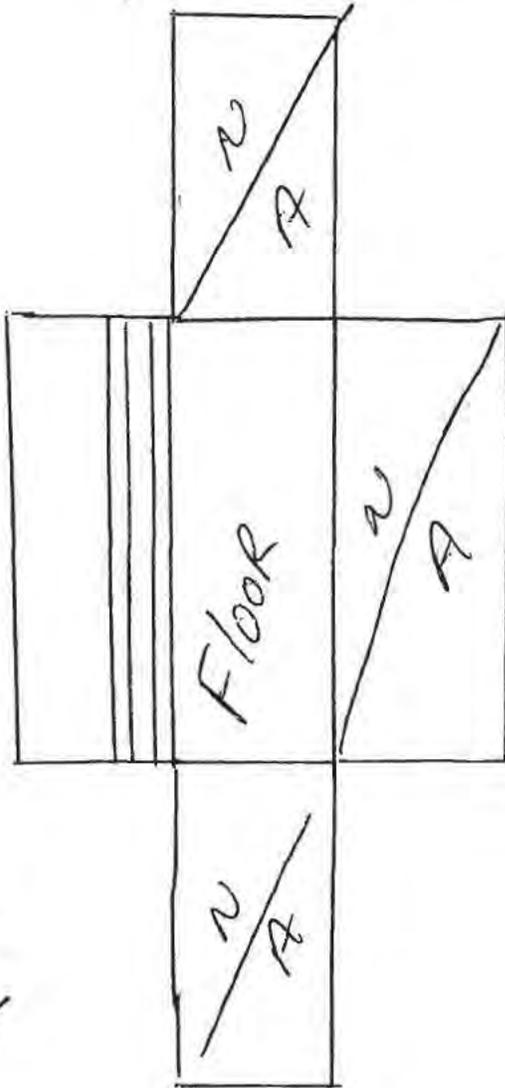
ALL WALLS
SCANNED up to 7'

AREA 2 WALLS

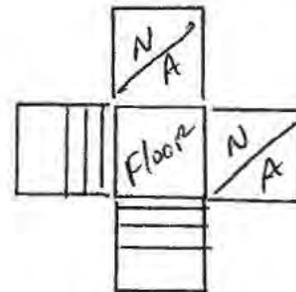


AREA 3 WALLS

Room IN Area 3



AREA 4



COPY

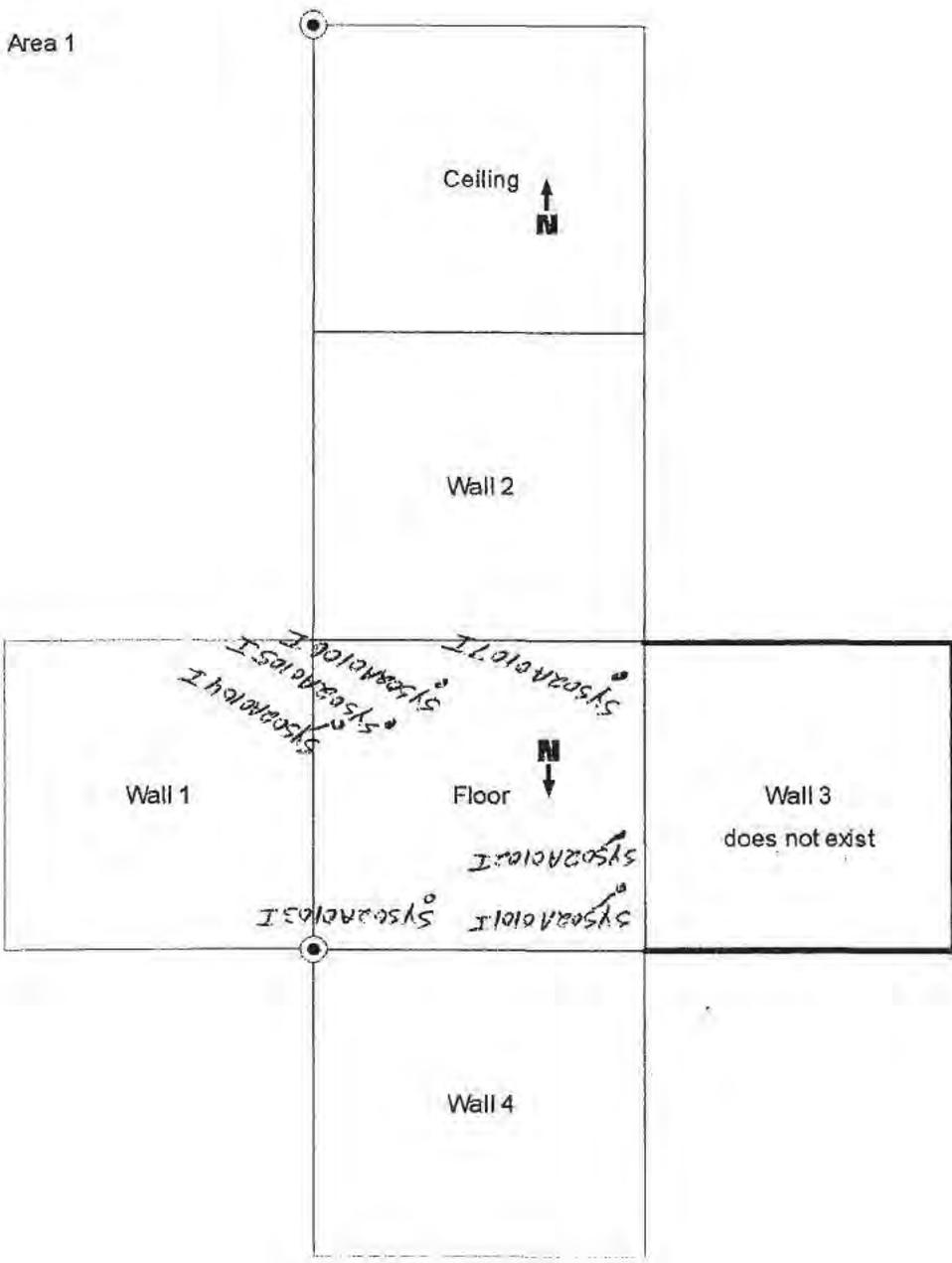
F13/353

MT-06-0504

~~pg 6 of 10~~
4/15/06
Pg 8 of 11/18

6H
6-22-06

wy 5/9/06
SYS-02A ~~judgmentals~~ Followup SCM SPOTS



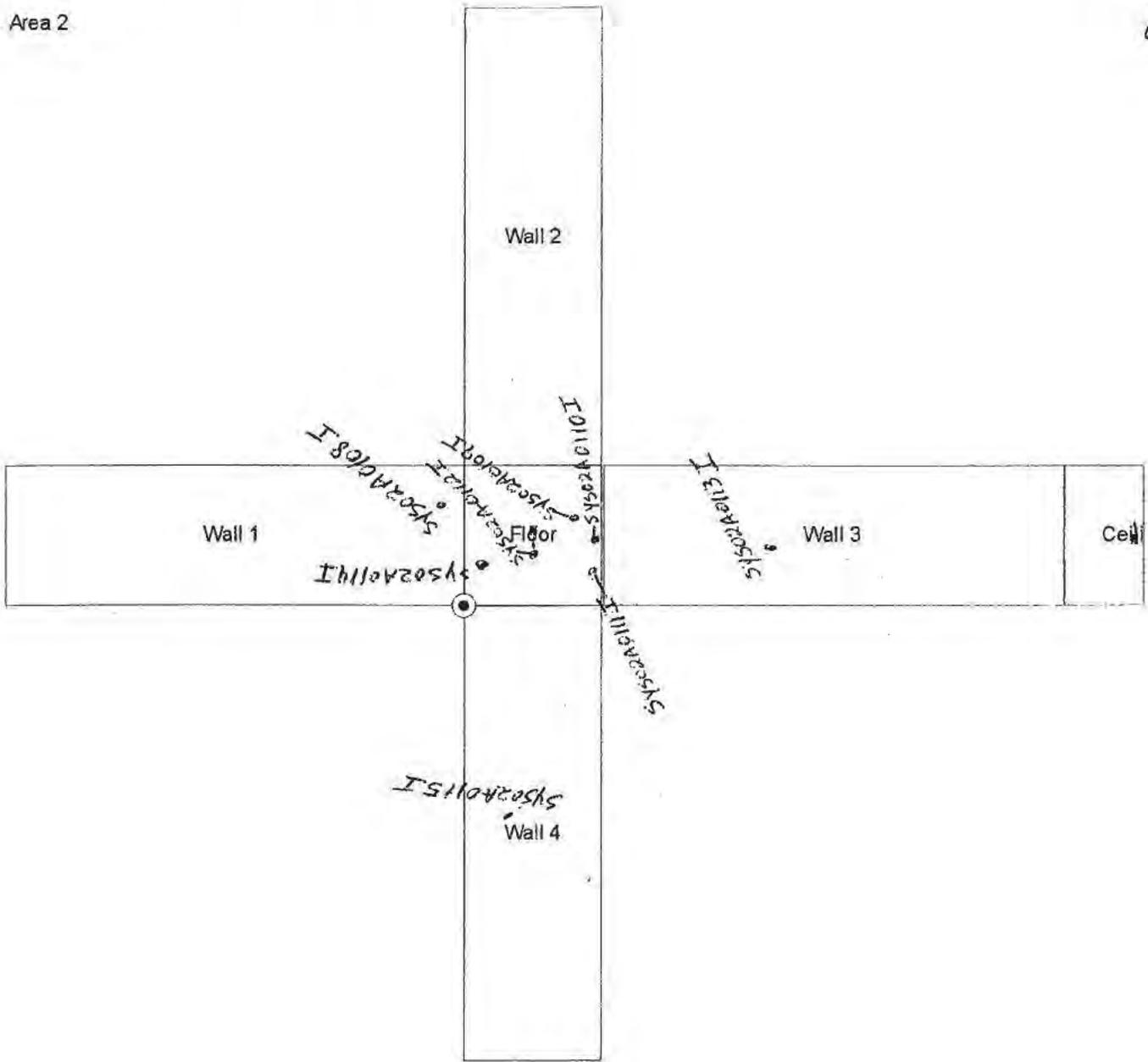
COPY

F 64/353

pg 7 of 10
Pg 9 of 10
6H
6-27

SYS-02A judgmentals

Area 2



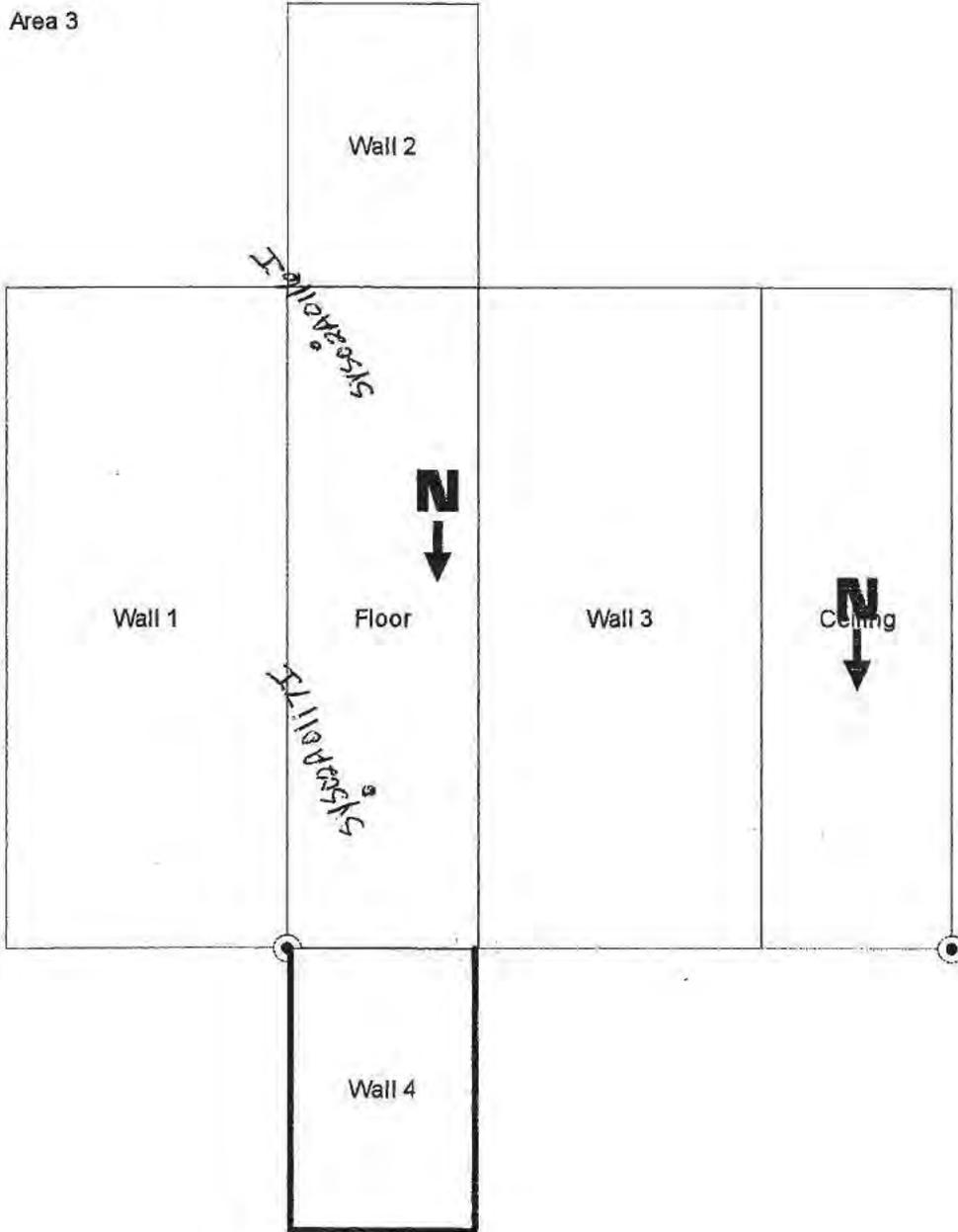
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F08/353

~~Pg 8 of 10~~
6/15/06
Pg 10 of 14
CM
6-22-06

SYS-02A judgmentals

Area 3



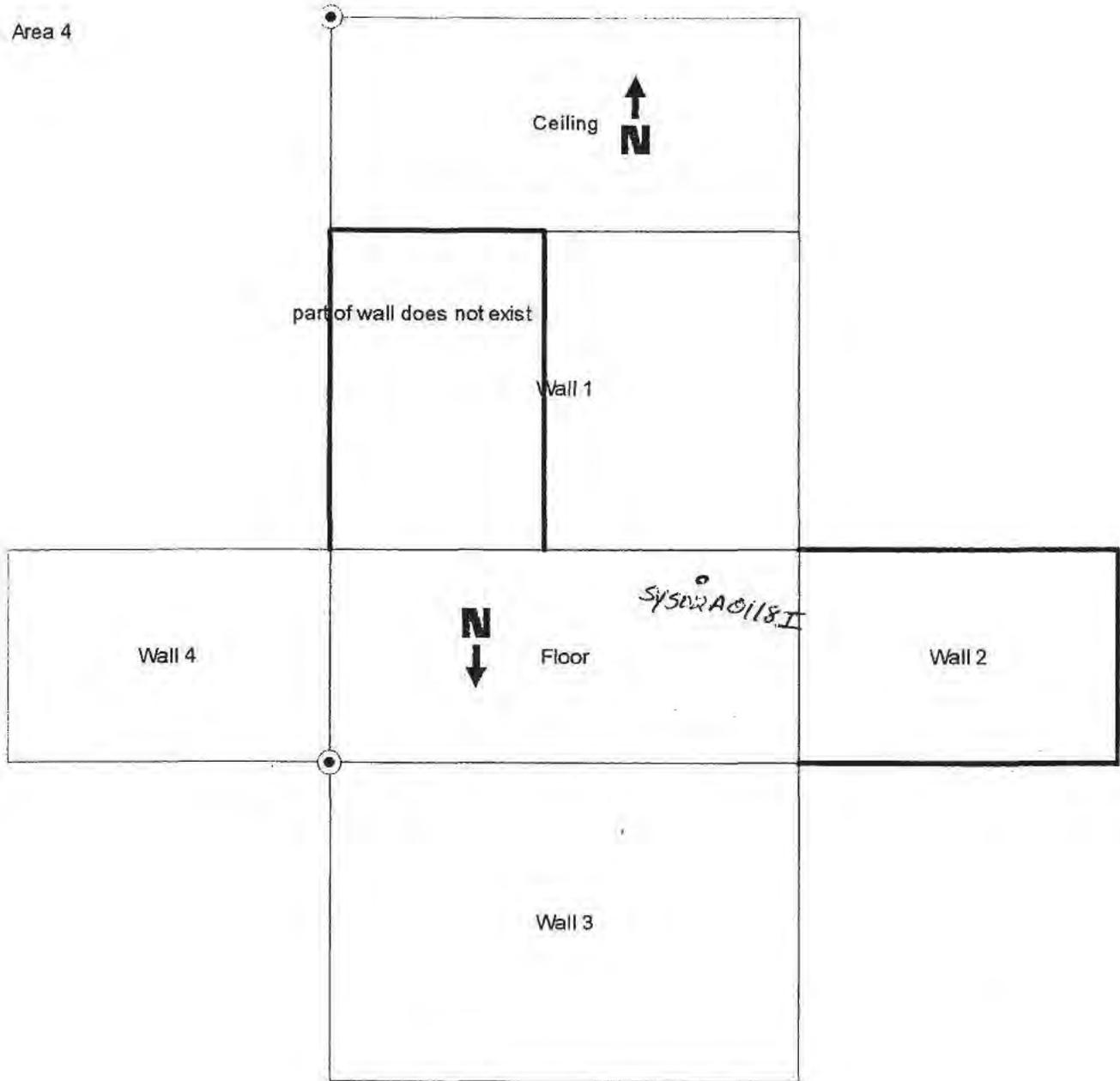
COPY

F66/353

pg 9 of 10
6/15/04
4
Pg 11 of 14
6/11
6-22

SYS-02A judgmentals

Area 4



COPY

F67/353

MT-06-0504
 Pg 14 of 18
 6/22/06

Surface Contamination Monitor Survey Investigation Summary Revision 0

SYS 02A

Survey Unit: T-99 Crawl Space Areas 1-4	SCM Survey Unit: 1N-99
SCM ID	SCM 23
Calibration Due Date	06-01-06

Room	Surface	*Spots Marked from SCM Surveys	*HH Investigations
Area 1	Floor	7	
Area 1	Walls	0	
Area 2	Floor	6	
Area 2	Walls	3	
Area 3 and 4	Floor	21	
Area 3 and 4	Walls	0	

*Due to the close proximity of spots one mark may include more than one spot resulting in a different number of Hand Held investigations performed.

Name Javid Kelley

Signature _____

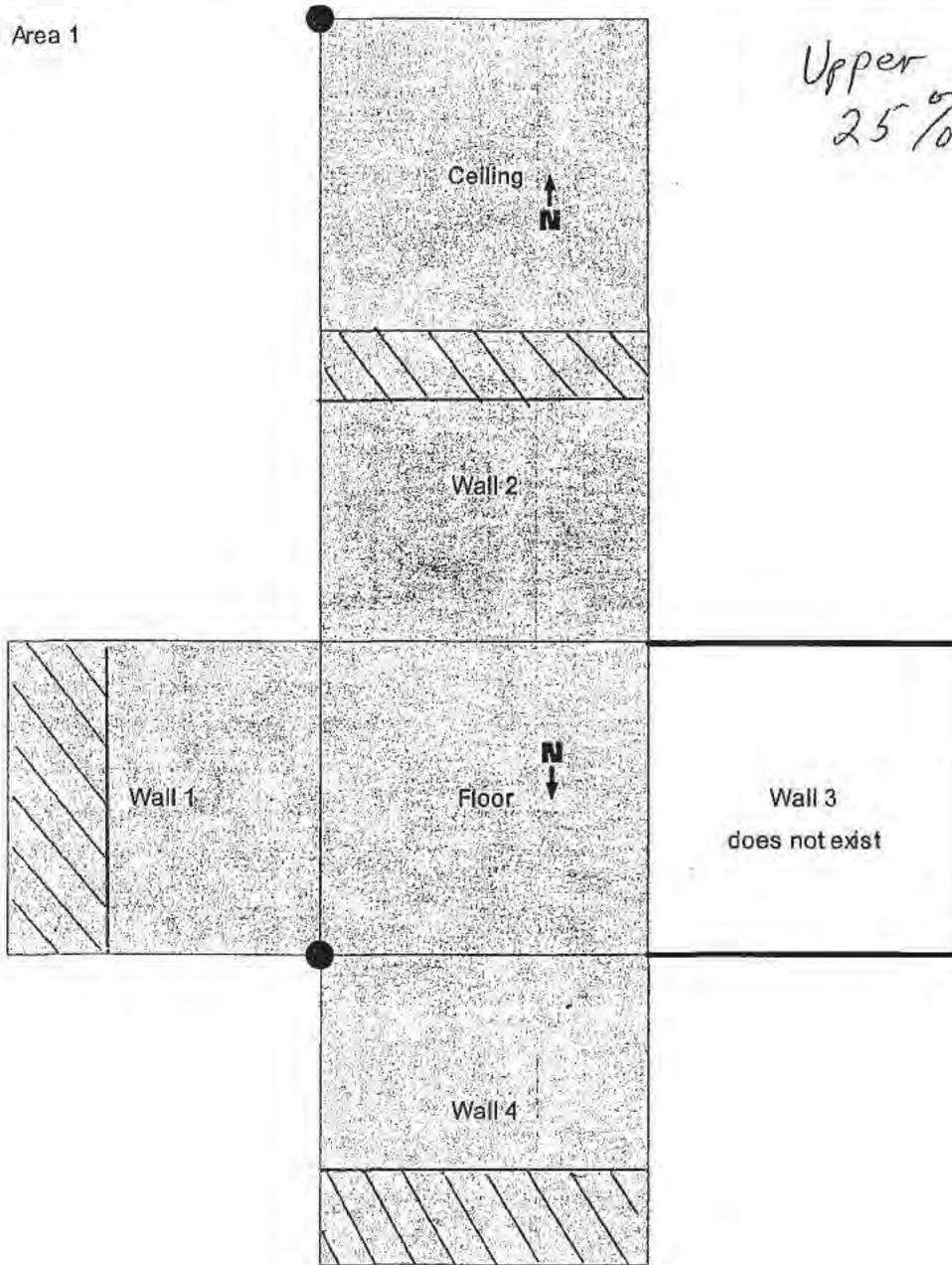
Date 5-31-06

F-70/353

COPY

SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 25% of accessible walls > 2 meters

Area 1



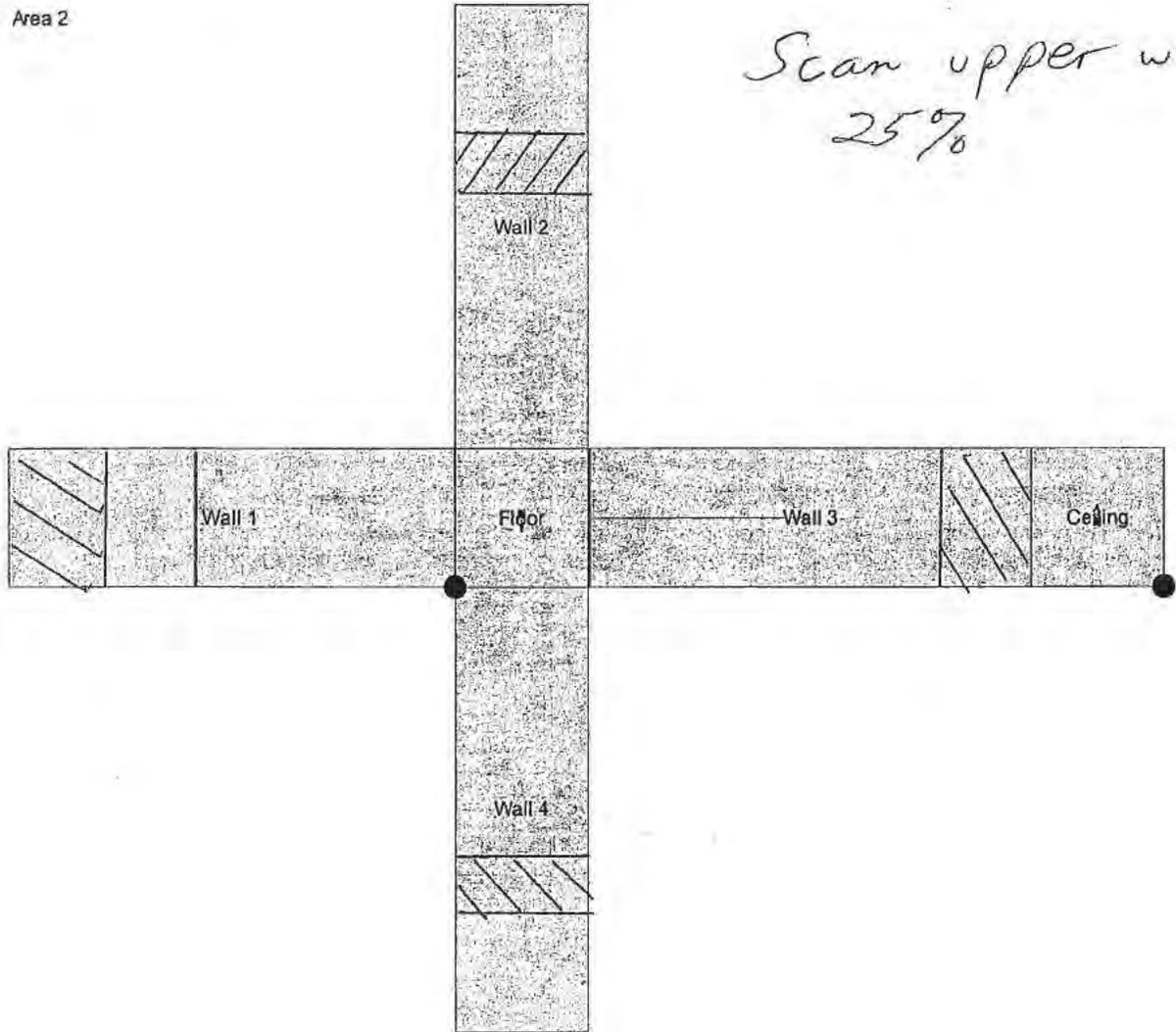
Upper wall scan
25%

COPY

F71/353

SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 25% of accessible walls > 2 meters

Area 2



*Scan upper walls
25%*

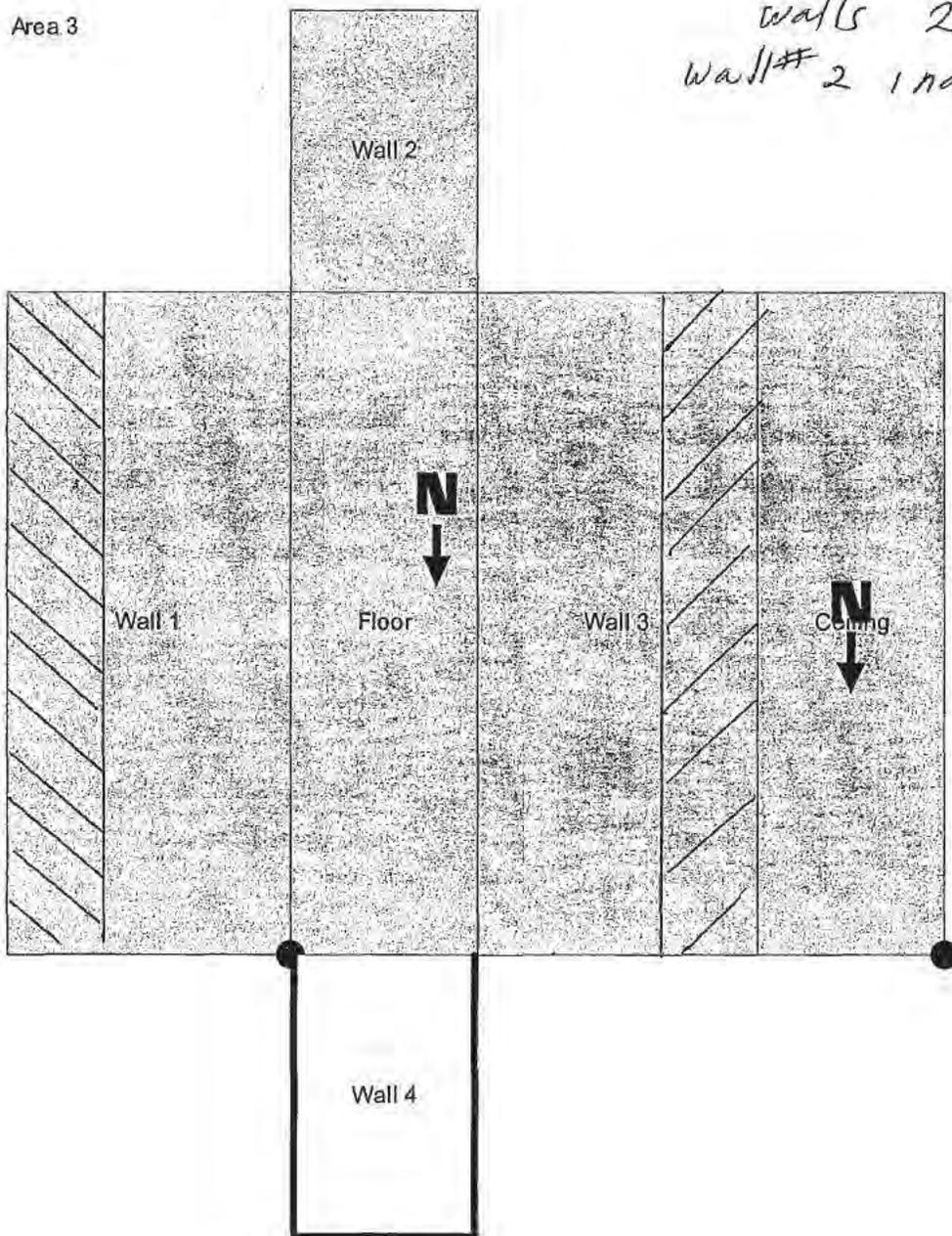
COPY

F-12/353

SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 25% of accessible walls > 2 meters

*Scanned upper
walls 25%
Wall # 2 inaccessible*

Area 3



COPY

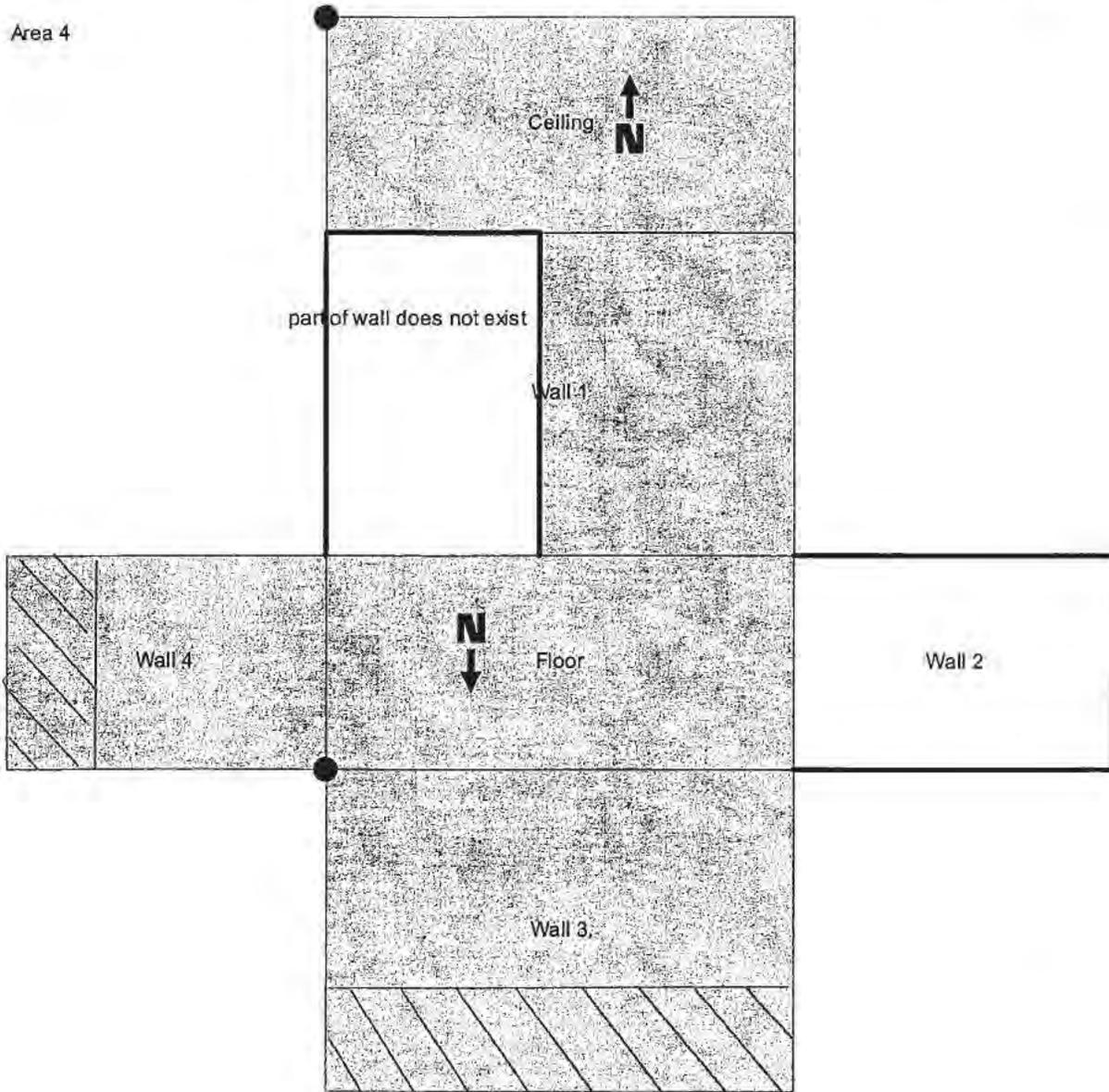
180518

MT-06-0504

SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 25% of accessible walls > 2 meters

Scanned 25%
of upper walls

Area 4



COPY

F-11/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/J AREA/ROOM)	TBLDG 99 CRAWLSPACE	SURVEY NO.	MT-06-0550
PURPOSE:	station and judgemental for Reshad	RWP NO.	N/A
	SY502A	DATE:	5/25/06
		TIME:	1205

MAP / DRAWING

SY502A 0104S & SY502A 0105S NOT TAKEN
BECAUSE OF INACCESSIBILITY

ONLY AREAS 1-4 ON THIS SURVEY
WERE COMPLETED

See attached maps

LEGEND:
 # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - = radiological boundary

= mrem/hr neutron = swipe number
 = air sample number or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06
 		
 		

Completed by: (Signature)	<i>Wayne Jones</i>	Date:	5/25/06
Completed by: (Print Name)	WAYNE JONES		
Counted by: (Signature)	<i>See attached</i>	HP#	N/A
Counted by: (Print Name)			
Reviewed/Approved by: (Signature)	<i>Donald R. O'Neil</i>	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald B. Daily		F-75/353

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
1	see	attached		SY502A01015
2				SY502A01025
3				SY502A01035
4				SY502A01045
5				SY502A01075
6				SY502A01085
7				SY502A01095
8				SY502A01015
9				SY502A01025
10				SY502A01035
11				SY502A01045
12				SY502A01055
/				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
/				

COMMENTS:

N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., coll, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

2-1003 pg

MT-06-0550

F77/353

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_138
 Batch Ended: 5/25/06 12:52
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0550 [12] W. JONES 5-25-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
B1	1	0.00	1.87		0.00	1.20	
B2	2	3.52	2.62		0.08	1.58	
B3	3	0.00	2.20		0.27	1.88	
B4	4	0.00	1.97		0.66	1.69	
C1	5	0.00	2.07		0.00	1.27	
C2	6	0.00	1.94		0.48	1.63	
C3	7	0.00	2.15		1.71	2.19	
C4	8	0.00	1.98		0.00	1.14	
D1	9	0.00	2.05		0.00	1.26	
D2	10	0.00	2.17		0.32	1.69	
D3	11	1.68	2.09		0.00	1.25	
D4	12	0.00	2.04		0.00	1.18	

WJ

WJ

RLH

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060525_1342.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0550_001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

2/10/7 Ed

MT-06-0550

15/353

[Handwritten signature]

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/25/06	1:42:36 PM	-1		10.00	10	9	12	12	611.05	0	20.0	B	1
5/25/06	1:53:27 PM	0		2.00	249	237	0	0	534.60	487	9.2		1
5/25/06	1:56:11 PM	1		2.00	36	31	1	11	523.22	70	27.5		1
5/25/06	1:58:54 PM	2		2.00	21	18	1	5	575.05	40	38.4		1
5/25/06	2:01:37 PM	3		2.00	14	13	0	2	618.83	26	51.1		1
5/25/06	2:04:20 PM	4		2.00	32	24	0	16	587.96	61	29.1		1
5/25/06	2:07:03 PM	5		2.00	15	12	0	6	577.61	28	49.7		1
5/25/06	2:09:46 PM	6		2.00	12	11	1	2	602.26	21	59.6		1
5/25/06	2:12:29 PM	7		2.00	11	10	0	5	625.18	20	61.7		1
5/25/06	2:15:12 PM	8		2.00	16	10	0	2	625.69	28	47.8		1
5/25/06	2:17:56 PM	9		2.00	17	15	0	0	581.71	32	44.7		1
5/25/06	2:20:39 PM	10		2.00	9	7	0	3	593.54	17	70.5		1
5/25/06	2:23:23 PM	11		2.00	7	5	0	6	527.87	13	93.6		1
5/25/06	2:26:07 PM	12		2.00	25	22	0	3	523.57	49	34.3		1

ind

2/005 Ed

0550-90-2W

F-19/353

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL11414
File ID: 25000144.s0
Priority: Yes

Description\Location
0601507 Resrad Sys02A West Head Hous
Long Count

Collector:
Date Received: 06/06/06
Date Collected: 06/06/06

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0	0.01
Cs-137	*	0	0.01
Pb-210		0.33 ✓	0.07
Ra-226		0.96 ✓	0.15
Ac-227 (D)	*	0	0.04
Th-230	*	0	0.97
Th-232 (D)		0.17 ✓	0.04
Pu-238	*	0	0.71
Am-241	*	0	0.01

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0	0.01
Bi-207	0.01	0.01
Bi-210m	0	0.01

Σ
DOT 0.00 nCi/g

Instrument type: High Purity Germanium

Σ DOT 2nCi/g limit, total activity.

- (D) Denotes identification by daughter emissions.
Sample is Assumed to be in secular equilibrium.
- * Indicates activity < MDA. MDA used in limits calculation

Comments: U-238d 0 pCi/g 1.87 pCi/g MDA
U-234 3.54 pCi/g 3.03 pCi/g MDA

Sample was counted for 40 hours to obtain lower MDA's.

Date: 06/08/06 Counted By: Analyzed By: Initials C/S

SYS-02A

static measurement locations for core sampling

Area: Area 1

Label	Type	Surface	LX	LY	
SYS-02A-1	Systematic	Floor		1	1

Area: Area 2

Label	Type	Surface	LX	LY	
SYS-02A-2	Systematic	Floor		3	1

Area: Area 3

Label	Type	Surface	LX	LY	
SYS-02A-3	Systematic	Floor		2	3
SYS-02A-4	Systematic	Floor		2	10
SYS-02A-5	Systematic	Floor		2	17
SYS-02A-6	Systematic	Floor		2	24

Area: Area 4

Label	Type	Surface	LX	LY	
SYS-02A-7	Systematic	Floor		3	5
SYS-02A-8	Systematic	Floor		10	5
SYS-02A-9	Systematic	Floor		17	5

Area: area 5

Label	Type	Surface	LX	LY	
SYS-02A-10	Systematic	Floor		1	6
SYS-02A-11	Systematic	Floor		8	6
SYS-02A-12	Systematic	Floor		15	6
SYS-02A-13	Systematic	Floor		22	6

Area: Area 6

Label	Type	Surface	LX	LY	
SYS-02A-14	Systematic	Floor		7	2

Area: Area7

Label	Type	Surface	LX	LY	
SYS-02A-15	Systematic	Floor		2	3
SYS-02A-16	Systematic	Floor		9	3

Area: Area 8

Label	Type	Surface	LX	LY	
SYS-02A-17	Systematic	Floor		6	1

SYS-02A-18 Systematic Floor 6 8

Area: Area 9

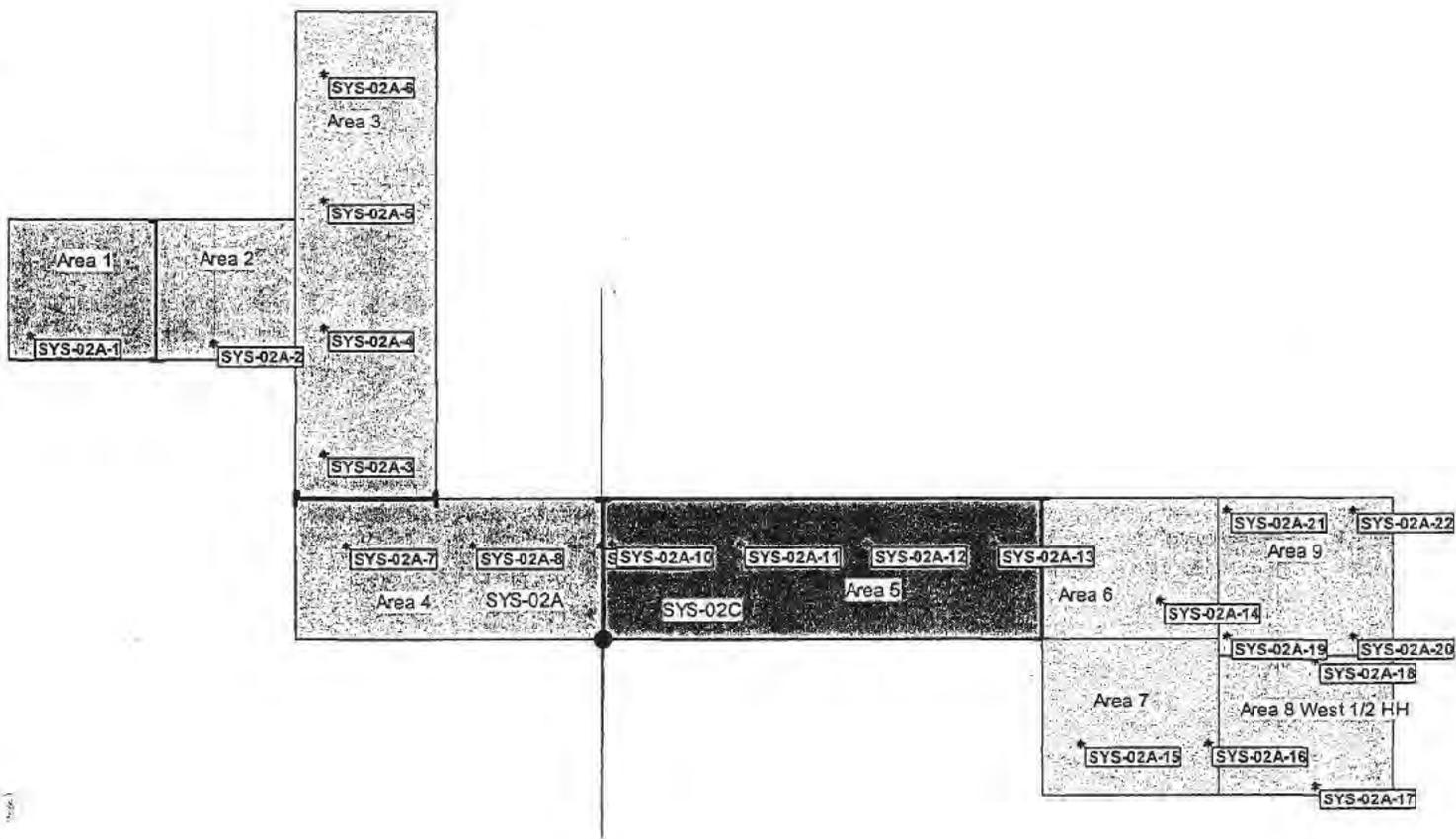
Label	Type	Surface	LX	LY	
SYS-02A-19	Systematic	Floor		0	1
SYS-02A-20	Systematic	Floor		8	1
SYS-02A-21	Systematic	Floor		0	8
SYS-02A-22	Systematic	Floor		8	8

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SYS-02A

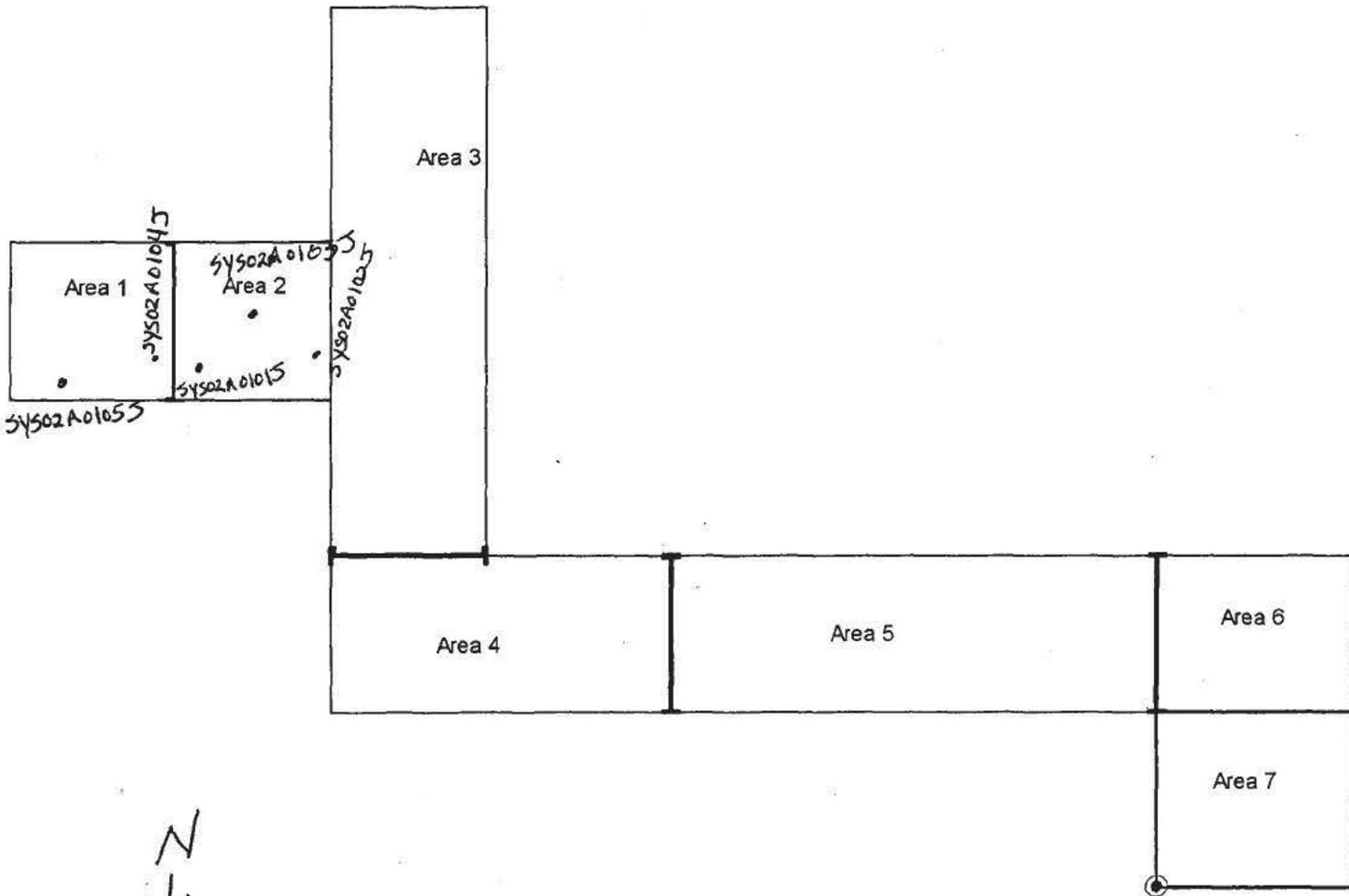
static measurement locations for core sampling

After a direct alpha and beta measurement are taken and the smear is taken,
then collect a bulk sample at the highest 20% (maximum # of 10) elevated activity areas identified on the floor.
Composite bulk sample with bulk samples taken at static locations on the floor.
then collect a bulk sample by drilling 1" deep at each static location on the floor.
Composite samples from 1" location into 1 sample container
Then repeat sampling at each location going a depth of 6".
Composite samples from 6" location into 1 sample container



F 83/353

SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 2 Plan View (laid flat on side)



218018d

MT-06-0550

F84/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T BLO6 99 CRAWLSPACE	SURVEY NO.	MT-06-0563
PURPOSE:	JUDGEMENTALS UPPER + LOWER SYS 02A	RWP NO.	N/A
		DATE:	6.3.06
		TIME:	1200

MAP / DRAWING

SEE ATTACHED.

SCANNED 1 m² AROUND
each ceiling point & 1 ft
NO ELEVATED READINGS
DETECTED. EXCEPT 01105.
01105 WAS TAKEN ON THE
FLOOR IN area 1 all floors
ARE RESRAD. NO follow up
NEEDED

COPY

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr (β+γ) extremity on contact
K = factor of 1000
- - - - = radiological boundary

△ # = mrem/hr neutron # = swipe number
□ # = air sample number #/α or β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	592215926	5/21/07
	N	
	A	

Completed by: (Signature)	<i>[Signature]</i>	Date:	6.3.06
Completed by: (Print Name)	Richardson G. Hodges		
Counted by: (Signature)	SEE ATTACHED	HP#	N/A
Counted by: (Print Name)	SHETS	Date:	N/A
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-9-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

F07/353

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
1	SEE ATTACHED			01015
2				01025
3				01035
4				01045
5				01055
6				01065
7				01075
8				01085
9				01095
10				01105
11				02015
12				02025
13				02035
14				02045
15				02055
16				02065
17				02075
18				02085
19				02095
20	SEE ATTACHED			02105
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
N/A				

COMMENTS: N/A **COPY**

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060605_1004.results
Comma-Delimited File Name: ~~D:\MARSSIM_LSC\MT-06-0563-001~~
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY

MT-06-0563
Pg 3 of 2

FSM 353

MARSSIM Smear Data

B
C

Instrument Block Data
 Machine=Tri-Carb 2900TR
 Version=2.06
 423022
 MODEL=Tri-Carb 2900TR
 VERSION=2.06
 SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/5/06	10:04:57 AM	-1	10.00		9	8	12	10	606.00	0	21.5	B	1
6/5/06	10:15:45 AM	0	2.00		257	244	0	0	537.79	501	9.0		1
6/5/06	10:18:28 AM	1	2.00		39	34	0	1	618.75	71	25.6		1
6/5/06	10:21:11 AM	2	2.00		32	30	0	1	613.76	59	28.6		1
6/5/06	10:23:54 AM	3	2.00		3	3	0	0	650.16	6	157.4		1
6/5/06	10:26:37 AM	4	2.00		40	35	0	0	590.69	74	25.2		1
6/5/06	10:29:19 AM	5	2.00		1	1	0	0	642.86	2	526.2		1
6/5/06	10:32:02 AM	6	2.00		28	25	2	0	499.84	56	31.4		1
6/5/06	10:34:45 AM	7	2.00		1	0	0	0	646.20	1	571.0		1
6/5/06	10:37:27 AM	8	2.00		3	4	0	0	647.29	6	151.5		1
6/5/06	10:40:10 AM	9	2.00		1	1	1	0	647.89	1	571.0		1
6/5/06	10:42:52 AM	10	2.00		5	5	0	0	609.05	9	114.2		1
6/5/06	10:45:35 AM	11	2.00		10	8	0	0	629.75	18	65.5		1
6/5/06	10:48:17 AM	12	2.00		1	1	0	0	618.17	2	420.9		1
6/5/06	10:50:59 AM	13	2.00		9	8	0	0	607.68	16	70.4		1
6/5/06	10:53:43 AM	14	2.00		3	2	0	0	641.57	5	181.8		1
6/5/06	10:56:26 AM	15	2.00		32	29	1	0	570.93	60	28.9		1
6/5/06	10:59:10 AM	16	2.00		29	26	0	1	517.50	57	30.7		1
6/5/06	11:02:14 AM	17	2.00		177	162	0	1	575.99	335	10.9		1
6/5/06	11:04:57 AM	18	2.00		3	2	0	0	623.29	6	157.4		1
6/5/06	11:07:39 AM	19	2.00		4	2	0	0	640.16	8	125.4		1
6/5/06	11:10:22 AM	20	2.00		2	1	0	0	606.47	3	276.2		1

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COPY

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 MTR: 06-0563

F 90/353

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_152
 Batch Ended: 6/5/06 8:44
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0563 [20] RICHARDSON 6-5-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.21		1.68	2.26	
A2	2	1.79	2.02		0.20	1.65	
A3	3	2.01	2.28		0.12	1.78	
A4	4	3.98	3.00		2.67	2.41	
B1	5	0.00	1.87		0.00	1.20	
B2	6	0.00	1.87		0.48	1.58	
B3	7	1.91	2.26		4.02	2.97	
B4	8	0.00	1.97		0.66	1.69	
A1	9	0.00	2.20		0.38	1.85	
A2	10	1.79	2.02		0.20	1.65	
A3	11	0.00	2.26		0.00	1.26	
A4	12	3.98	2.98		0.26	1.71	
B1	13	0.00	1.93		2.62	2.38	
B2	14	0.00	1.87		0.48	1.58	
B3	15	0.00	2.20		0.27	1.88	
B4	16	0.00	2.01		3.04	2.39	
B1	17	0.00	1.87		0.00	1.20	
B2	18	1.69	1.87		0.28	1.58	
B3	19	1.92	2.18		0.00	1.33	
B4	20	0.00	1.95		0.00	1.20	

Fr 91/353

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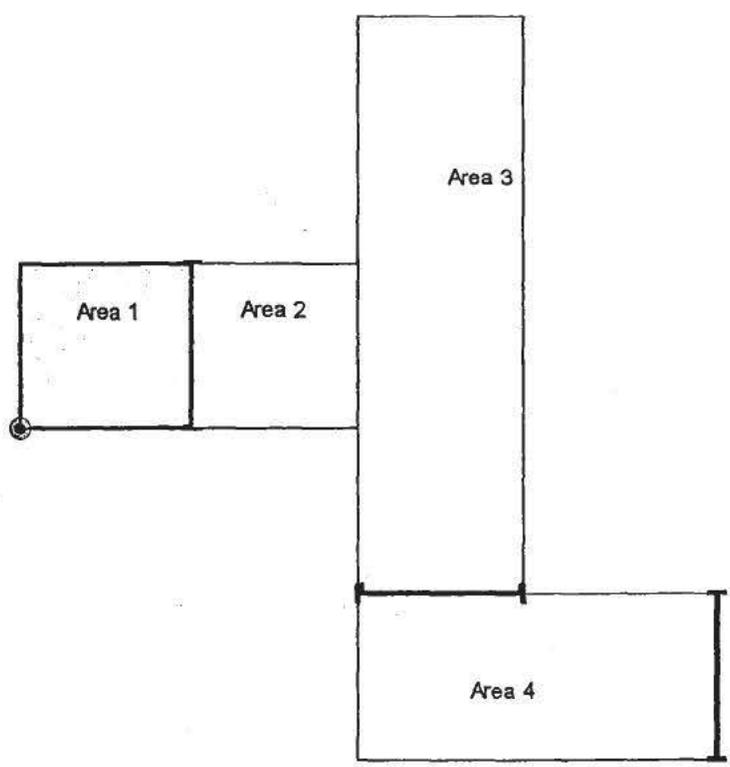
pq 50F12
 MT-06-0563

T-Building Judgements upper and lower SYS02A

RSDS# MT-06-0563 RCT: RCT:

Alpha	43-68 BKG:	0	EFF:	0.2	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1611	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02A0101J	5922		5926	1	1	6/3/06	7:32	24	120	95
ALPHA	SYS02A0102J	5922		5926	1	2	6/3/06	7:38	11	120	44
ALPHA	SYS02A0103J	5922		5926	1	3	6/3/06	7:42	7	120	28
ALPHA	SYS02A0104J	5922		5926	1	4	6/3/06	7:46	14	120	56
ALPHA	SYS02A0105J	5922		5926	1	5	6/3/06	7:51	7	120	28
ALPHA	SYS02A0106J	5922		5926	1	6	6/3/06	7:55	21	120	83
ALPHA	SYS02A0107J	5922		5926	1	7	6/3/06	8:04	23	120	91
ALPHA	SYS02A0108J	5922		5926	1	8	6/3/06	8:09	7	120	28
ALPHA	SYS02A0109J	5922		5926	1	9	6/3/06	8:13	7	120	28
ALPHA	SYS02A0110J	5922		5926	1	10	6/3/06	8:16	29	120	115
ALPHA	SYS02A0201J	5922		5926	1	11	6/3/06	8:20	5	120	20
ALPHA	SYS02A0202J	5922		5926	1	12	6/3/06	8:24	3	120	12
ALPHA	SYS02A0203J	5922		5926	1	13	6/3/06	8:28	5	120	20
ALPHA	SYS02A0204J	5922		5926	1	14	6/3/06	8:35	21	120	83
ALPHA	SYS02A0205J	5922		5926	1	15	6/3/06	8:39	10	120	40
ALPHA	SYS02A0206J	5922		5926	1	16	6/3/06	8:42	6	120	24
ALPHA	SYS02A0207J	5922		5926	1	17	6/3/06	8:46	13	120	52
ALPHA	SYS02A0208J	5922		5926	1	18	6/3/06	8:49	8	120	32
ALPHA	SYS02A0209J	5922		5926	1	19	6/3/06	8:55	5	120	20
ALPHA	SYS02A0210J	5922		5926	1	20	6/3/06	8:58	19	120	75 ✓
BETA	SYS02A0101J	5922		5926	2	1	6/3/06	7:33	94	60	926
BETA	SYS02A0102J	5922		5926	2	2	6/3/06	7:39	118	60	1163
BETA	SYS02A0103J	5922		5926	2	3	6/3/06	7:43	142	60	1399
BETA	SYS02A0104J	5922		5926	2	4	6/3/06	7:47	106	60	1044
BETA	SYS02A0105J	5922		5926	2	5	6/3/06	7:53	117	60	1153
BETA	SYS02A0106J	5922		5926	2	6	6/3/06	7:56	132	60	1301
BETA	SYS02A0107J	5922		5926	2	7	6/3/06	8:06	126	60	1241
BETA	SYS02A0108J	5922		5926	2	8	6/3/06	8:10	159	60	1567
BETA	SYS02A0109J	5922		5926	2	9	6/3/06	8:14	144	60	1419
BETA	SYS02A0110J	5922		5926	2	10	6/3/06	8:17	126	60	1241
BETA	SYS02A0201J	5922		5926	2	11	6/3/06	8:22	83	60	818
BETA	SYS02A0202J	5922		5926	2	12	6/3/06	8:26	63	60	621
BETA	SYS02A0203J	5922		5926	2	13	6/3/06	8:29	81	60	798
BETA	SYS02A0204J	5922		5926	2	14	6/3/06	8:36	130	60	1281
BETA	SYS02A0205J	5922		5926	2	15	6/3/06	8:40	127	60	1251
BETA	SYS02A0206J	5922		5926	2	16	6/3/06	8:43	135	60	1330
BETA	SYS02A0207J	5922		5926	2	17	6/3/06	8:47	91	60	897
BETA	SYS02A0208J	5922		5926	2	18	6/3/06	8:50	130	60	1281
BETA	SYS02A0209J	5922		5926	2	19	6/3/06	8:56	74	60	729
BETA	SYS02A0210J	5922		5926	2	20	6/3/06	8:59	100	60	985 ✓

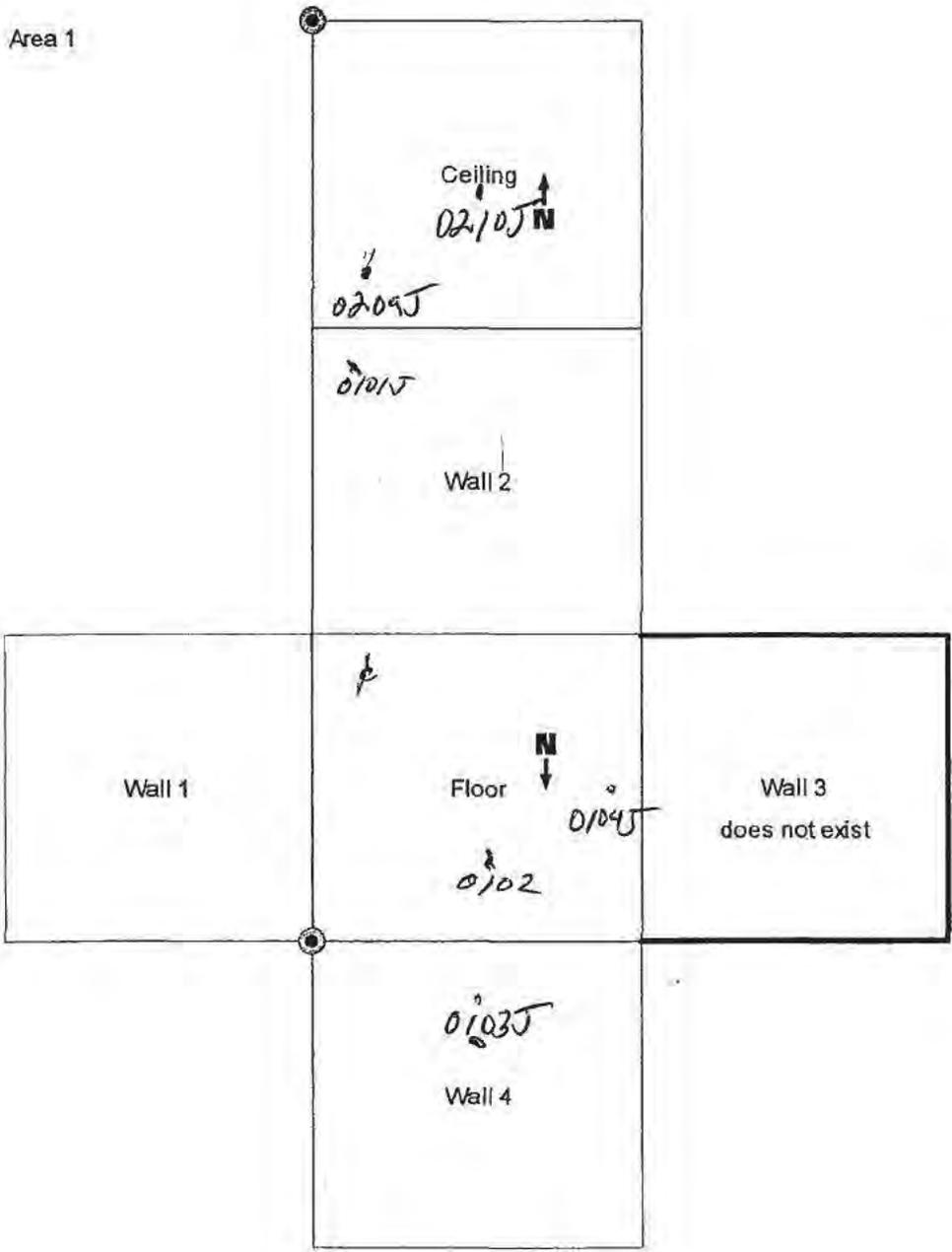
SYS-02A T99 through brickwall to East part of the West Headhouse airshaft
Class 2 Judgmentals



COPY

SYS-02A judgmentals

Area 1

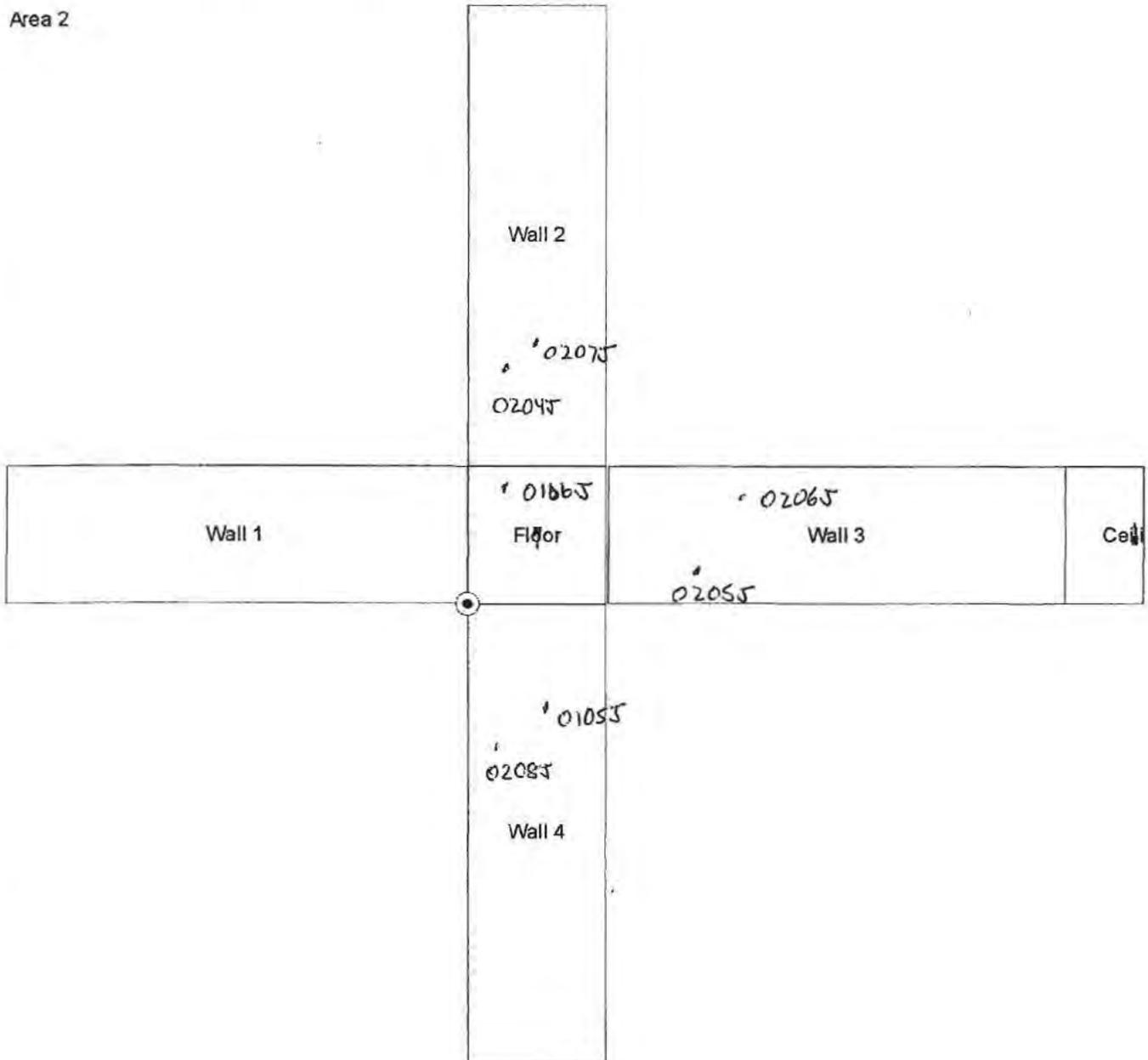


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F95/353

SYS-02A judgmentals

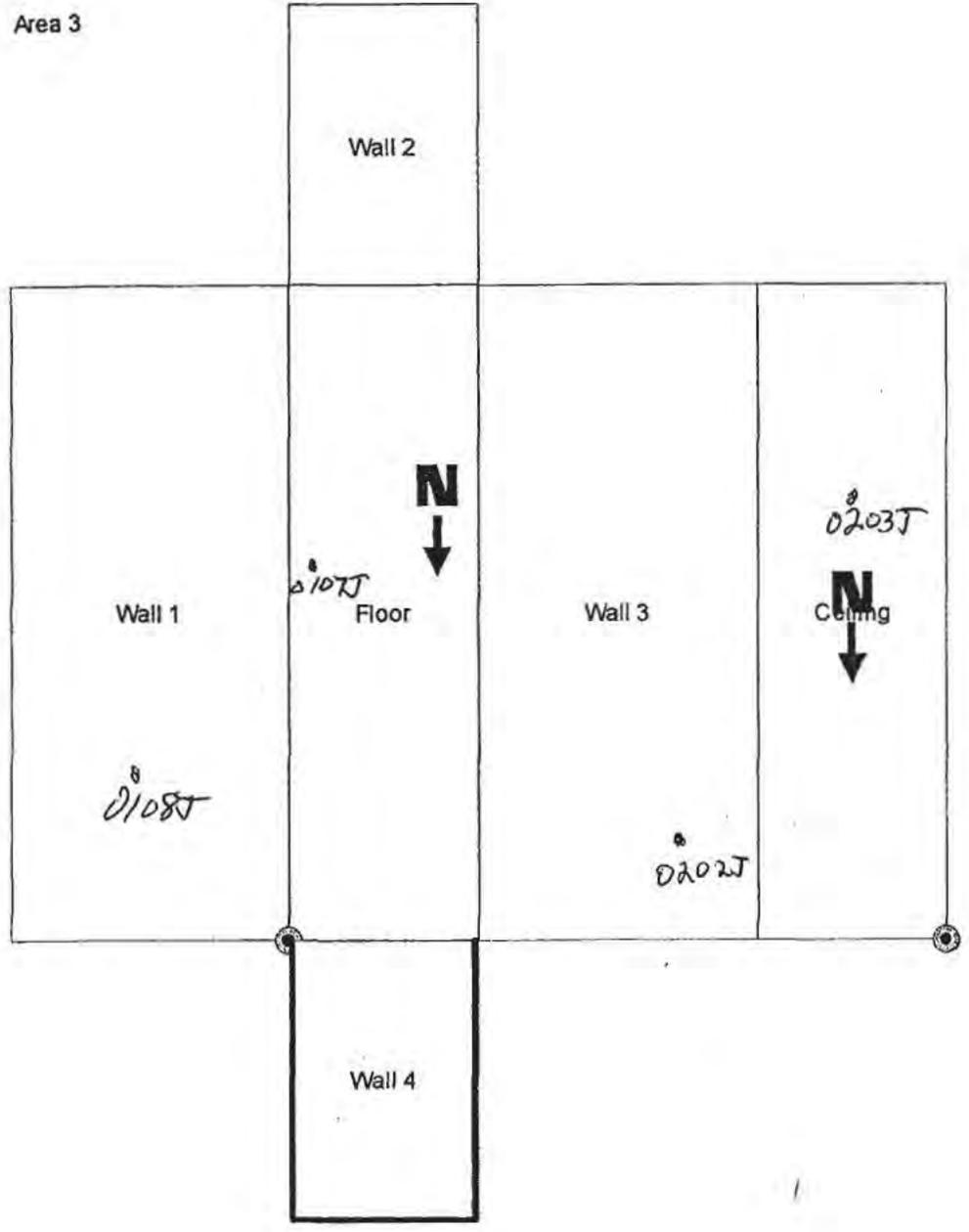
Area 2



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F96/353

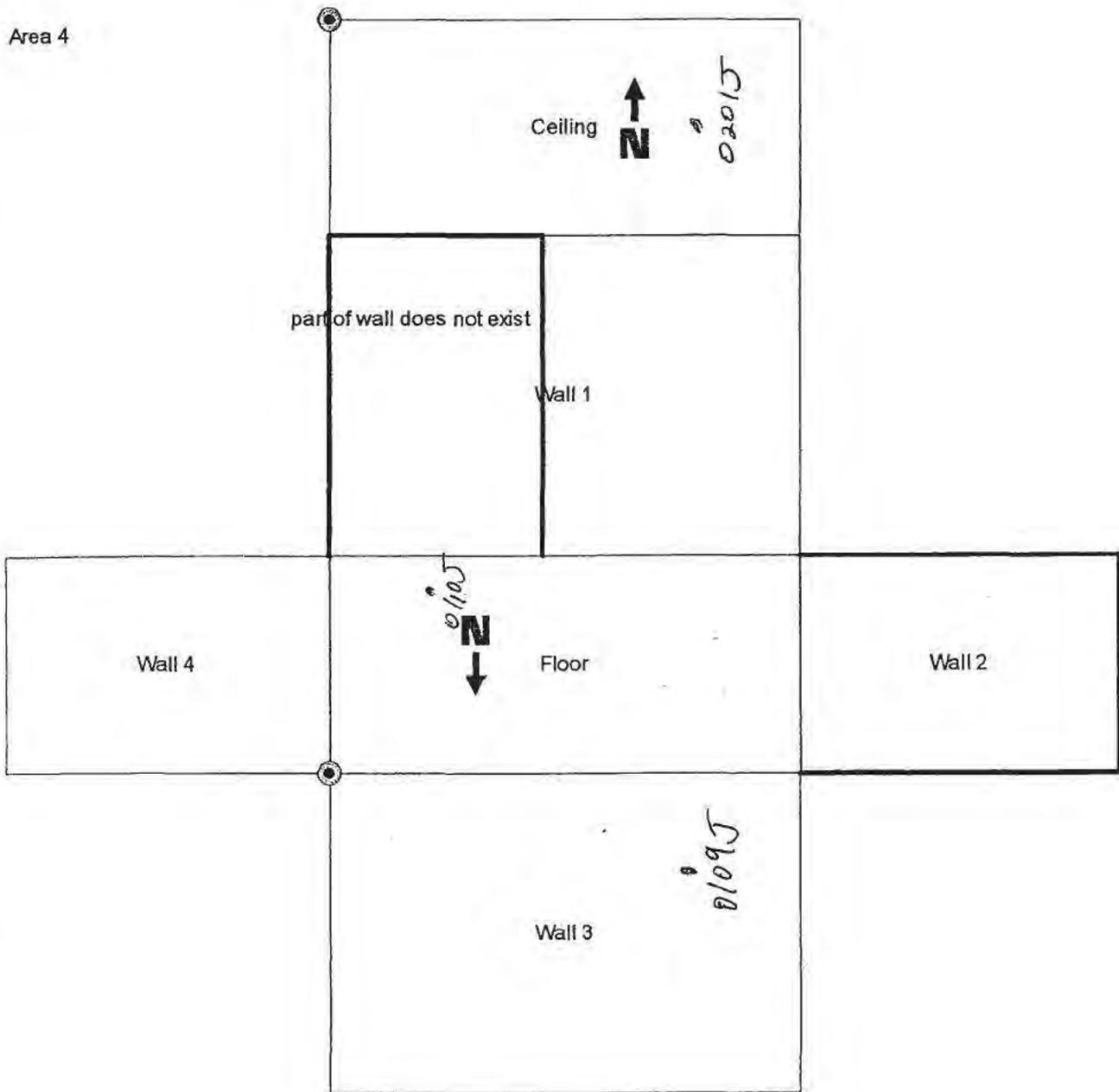
SYS-02A judgmentals



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· pg 120F12
· MIT-06-0563

SYS-02A judgmentals



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F98/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>TBLOG 99 Crawl/Space</u>	SURVEY NO. <u>MT-06-0566</u>
PURPOSE: <u>Upper and lower static</u>	RWP NO. <u>N/A</u>
	DATE: <u>6/3/06</u>
	TIME: <u>0945</u>

MAP / DRAWING

Static #13 & 14 ARE NOT ACCESSIBLE

1 meter Sg. SCAN AROUND Ceiling Points ^{STATIC} JAH/7422
6-9-06

See attached map

COPY

LEGEND:

= mrem/hr (γ) whole body

#E = mrem/hr ($\beta + \gamma$) extremity on contact

K = factor of 1000

----- = radiological boundary



= mrem/hr neutron



= swipe number



= air sample number



or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06
 	 	
 	 	

Completed by: (Signature) <u>Wayne Jones</u>	Date: <u>6/3/06</u>
Completed by: (Print Name) <u>WAYNE JONES / J. HULLA</u>	
Counted by: (Signature) <u>see attached</u>	HP# <u>N/A</u> Date: <u>N/A</u>
Counted by: (Print Name) <u> </u>	
Reviewed/Approved by: (Signature) <u>Jerry Taylor</u>	Date: <u>6-9-06</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

1991353

110811
pg 3 of 11
MT-06-0566

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_154
Batch Ended: 6/5/06 9:40
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0566 [18] W. JONES 6-5-06 RLH

COPY

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.20		0.38	1.85	
A2	2	0.00	2.06		3.85	2.61	
A3	3	0.00	2.26		0.00	1.26	
A4	4	0.00	2.13		1.78	2.09	
B1	5	1.58	1.93		2.41	2.38	
B2	6	0.00	1.85		0.00	1.12	
B3	7	1.91	2.20		0.05	1.88	
B4	8	3.60	2.76		0.25	1.69	
D1	9	0.00	2.05		0.00	1.26	
D2	10	0.00	2.15		0.00	1.20	
D3	11	0.00	2.13		2.74	2.49	
D4	12	1.71	2.04		0.00	1.18	
A1	13	0.00	2.21		1.68	2.26	
A2	14	0.00	2.00		0.00	1.17	
A3	15	0.00	2.26		0.00	1.26	
A4	16	0.00	2.10		0.00	1.21	
B1	17	0.00	1.87		0.00	1.20	
B2	✓ 18	1.69	1.85		0.00	1.12	

gm

gm

F10/353

R

Protocol# 3 - MARSSIM_Smear_3.lsa

User: 5801

MARSSIM Smear Data

COPY

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)

Report Name: Report1

Output Data Path: C:\Packard\TriCarb\Results\~MARSSIMS

Raw Results Path: C:\Packard\TriCarb\Results\5801\MARSSIM_Smear_3\20060605_1411.results

Comma-Delimited File Name: C:\Packard\TriCarb\Results\~MARSSIMS\MT-06-0566.001✓

Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_3.lsa

Count Conditions-

Nuclide: H-3 Mound

Quench Indicator: tSIE/AEC

External Std Terminator (sec): 0.5 2s

Pre-Count Delay (min): 0.00

Quench Set:

Low Energy: H-3 Smear

Count Time (min): 2.00

Count Mode: Normal

Assay Count Cycles: 1

Repeat Sample Count: 1

#Vials/Sample: 1

Calculate % Reference: Off

Background Subtract: On - 1st Vial

Low CPM Threshold: Off

2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On

Luminescence Correction: Off

Colored Samples: Off

Heterogeneity Monitor: Off

Coincidence Time (nsec): 18

Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				

M-1-00-90-1-11
11/02/05
0000-0000

F102/353

R

MARSSIM Smear Data

B
C

Instrument Block Data
 Machine=Tri-Carb 2900TR
 Version=2.06
 423022
 MODEL=Tri-Carb 2900TR
 VERSION=2.06
 SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/5/06	2:12:06 PM	-1	10.00		7	7	10	13	617.37	0	23.9	B	3
6/5/06	2:22:55 PM	0	2.00		189	179	0	1	556.12	363	10.5		3
6/5/06	2:25:38 PM	1	2.00		15	14	7	0	618.11	27	46.4		3
6/5/06	2:28:21 PM	2	2.00		30	27	0	0	650.38	54	28.9		3
6/5/06	2:31:05 PM	3	2.00		19	19	0	2	507.86	39	38.4		3
6/5/06	2:33:47 PM	4	2.00		9	9	0	0	648.66	16	64.8		3
6/5/06	2:36:30 PM	5	2.00		8	6	0	3	636.11	14	72.1		3
6/5/06	2:39:12 PM	6	2.00		31	29	1	0	552.86	59	28.9		3
6/5/06	2:41:54 PM	7	2.00		46	42	1	1	617.90	84	22.6		3
6/5/06	2:44:38 PM	8	2.00		79	68	1	1	595.64	148	16.7		3
6/5/06	2:47:22 PM	9	2.00		54	51	0	1	503.00	109	20.6		3
6/5/06	2:50:04 PM	10	2.00		81	75	0	1	547.26	158	16.5		3
6/5/06	2:52:48 PM	11	2.00		131	120	0	0	552.30	252	12.8		3
6/5/06	2:55:32 PM	12	2.00		41	35	0	2	633.25	75	24.1		3
6/5/06	2:58:15 PM	13	2.00		42	40	1	1	538.63	82	23.8		3
6/5/06	3:00:58 PM	14	2.00		47	42	0	0	587.57	87	22.5		3
6/5/06	3:03:40 PM	15	2.00		94	85	2	1	594.62	174	15.3		3
6/5/06	3:06:23 PM	16	2.00		26	24	0	0	607.25	49	31.6		3
6/5/06	3:09:11 PM	17	2.00		22	21	2	2	632.10	41	35.0		3
6/5/06	3:11:53 PM	✓18	2.00		36	32	0	0	606.40	66	26.2		3

WQ

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9950-90-LW

1103/353

MT 7-06-0500

pg 6 of 11

MT-06-0566

SYS-02A

static measurement locations

Area: Area 1

Label	Type	Surface	LX	LY
SYS-02A-1	Systematic	Floor	1	5
SYS-02A-2	Systematic	Ceiling	3	6

Area: Area 2

Label	Type	Surface	LX	LY
SYS-02A-3	Systematic	Floor	1	0
SYS-02A-4	Systematic	Wall 4	5	8
SYS-02A-5	Systematic	Wall 2	7	8
SYS-02A-6	Systematic	Wall 1	1	8
SYS-02A-7	Systematic	Wall 3	6	20
SYS-02A-8	Systematic	Wall 2	0	20

Area: Area 3

Label	Type	Surface	LX	LY
SYS-02A-9	Systematic	Floor	5	19
SYS-02A-10	Systematic	Ceiling	8	10
SYS-02A-11	Systematic	Ceiling	1	22
SYS-02A-12	Systematic	Wall 3	24	5
SYS-02A-13	Systematic	Wall 3	10	5
SYS-02A-14	Systematic	Wall 2	5	5
SYS-02A-15	Systematic	Wall 1	19	5
SYS-02A-16	Systematic	Wall 1	5	5

Area: Area 4

Label	Type	Surface	LX	LY
SYS-02A-17	Systematic	Ceiling	2	4
SYS-02A-18	Systematic	Ceiling	16	4
SYS-02A-19	Systematic	Wall 3	10	8
SYS-02A-20	Systematic	Wall 4	6	8

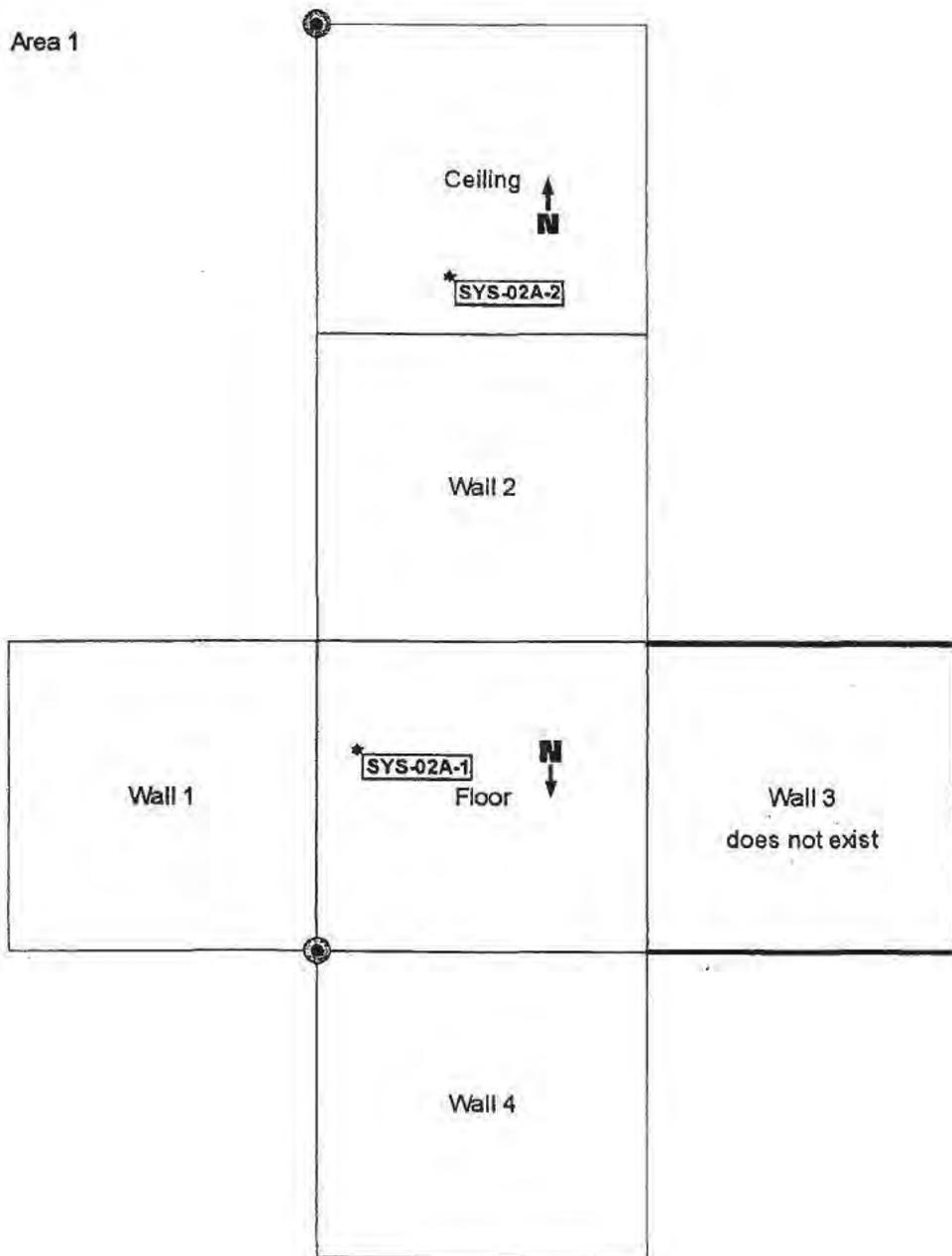
COPY

SYS-02A

static measurement locations

Scan 1 m2 around each static measurement location

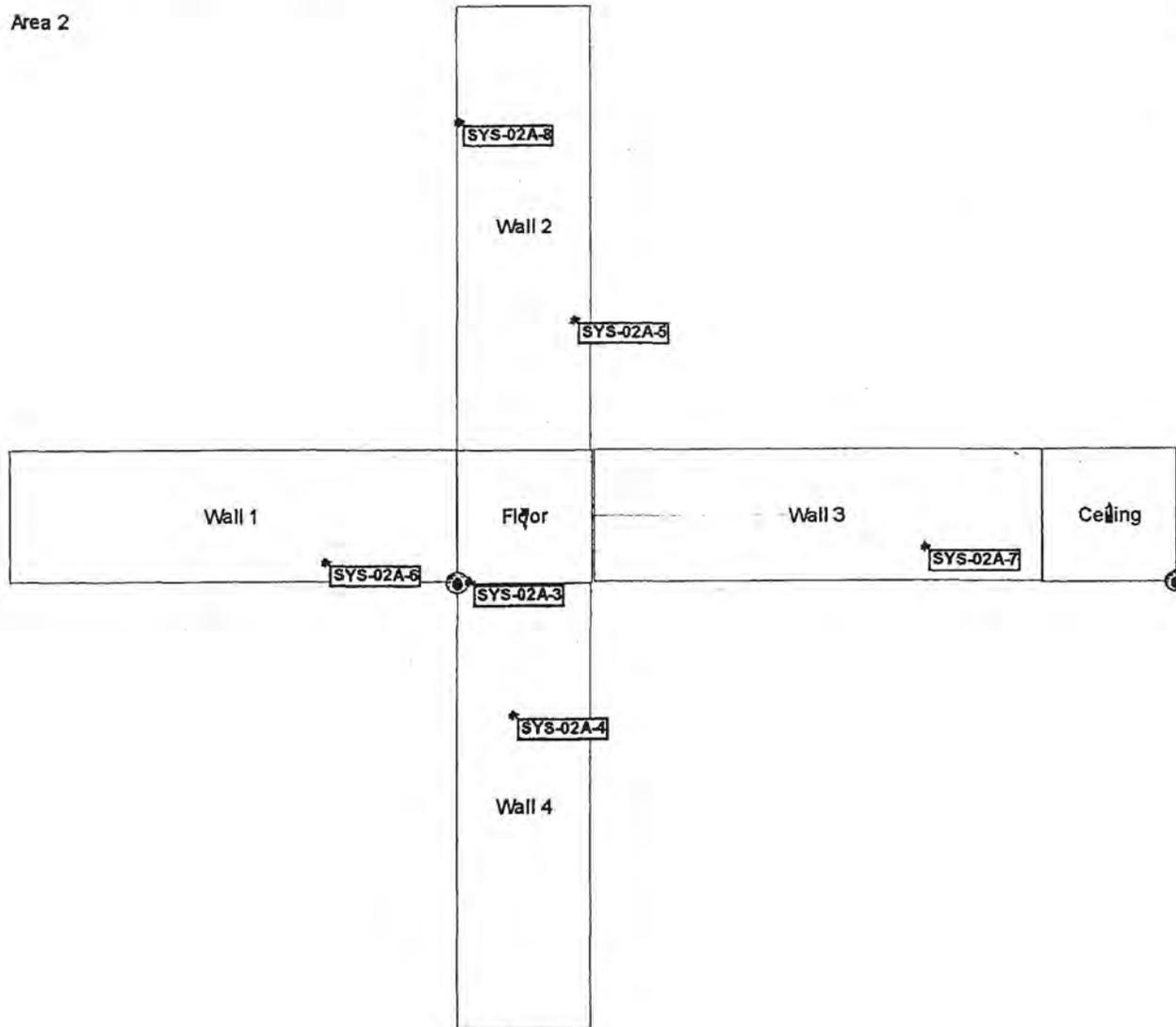
Area 1



COPY

SYS-02A
static measurement locations

Area 2



COPY

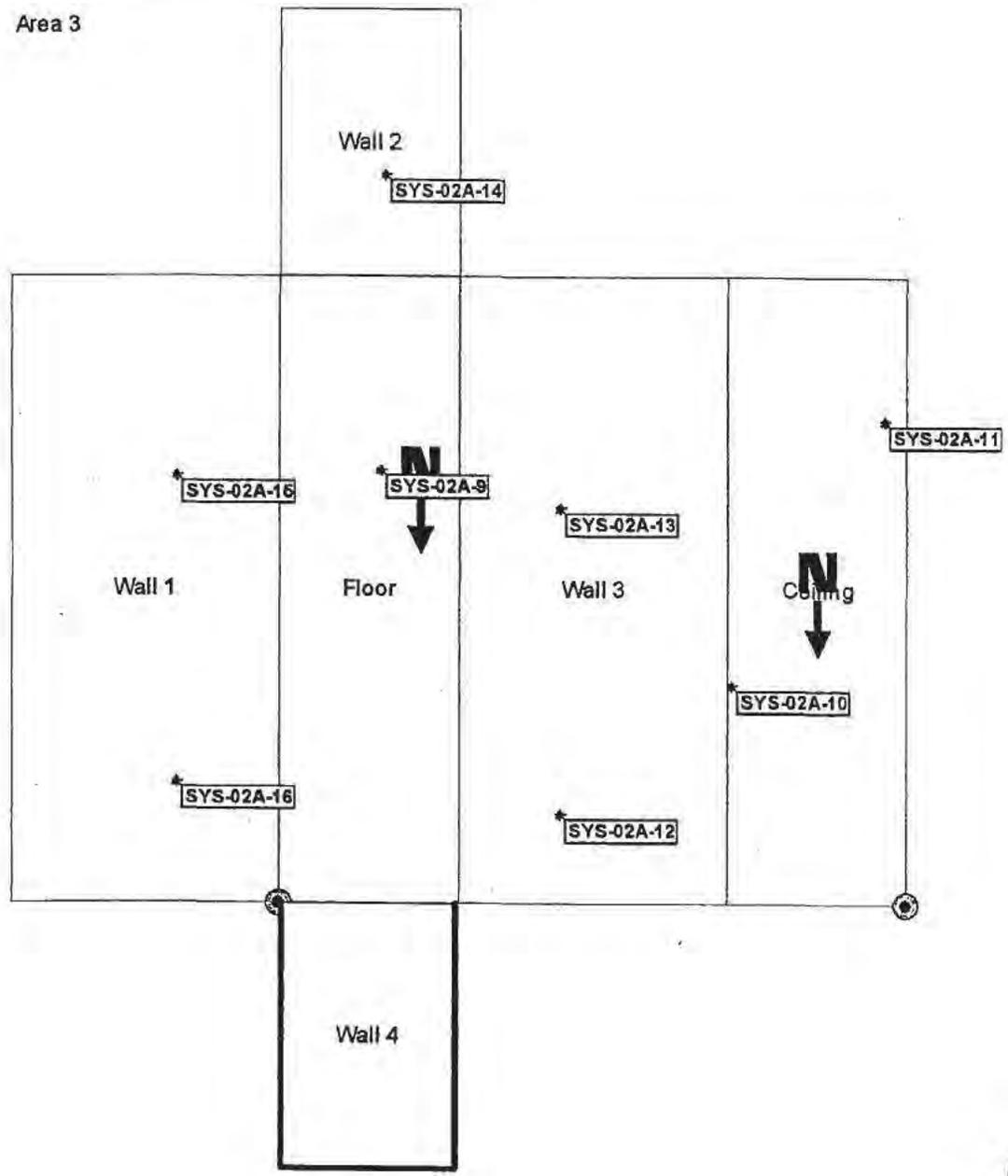
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pg 8 of 11

MT-06-0566

F106/353

SYS-02A
static measurement locations

Area 3



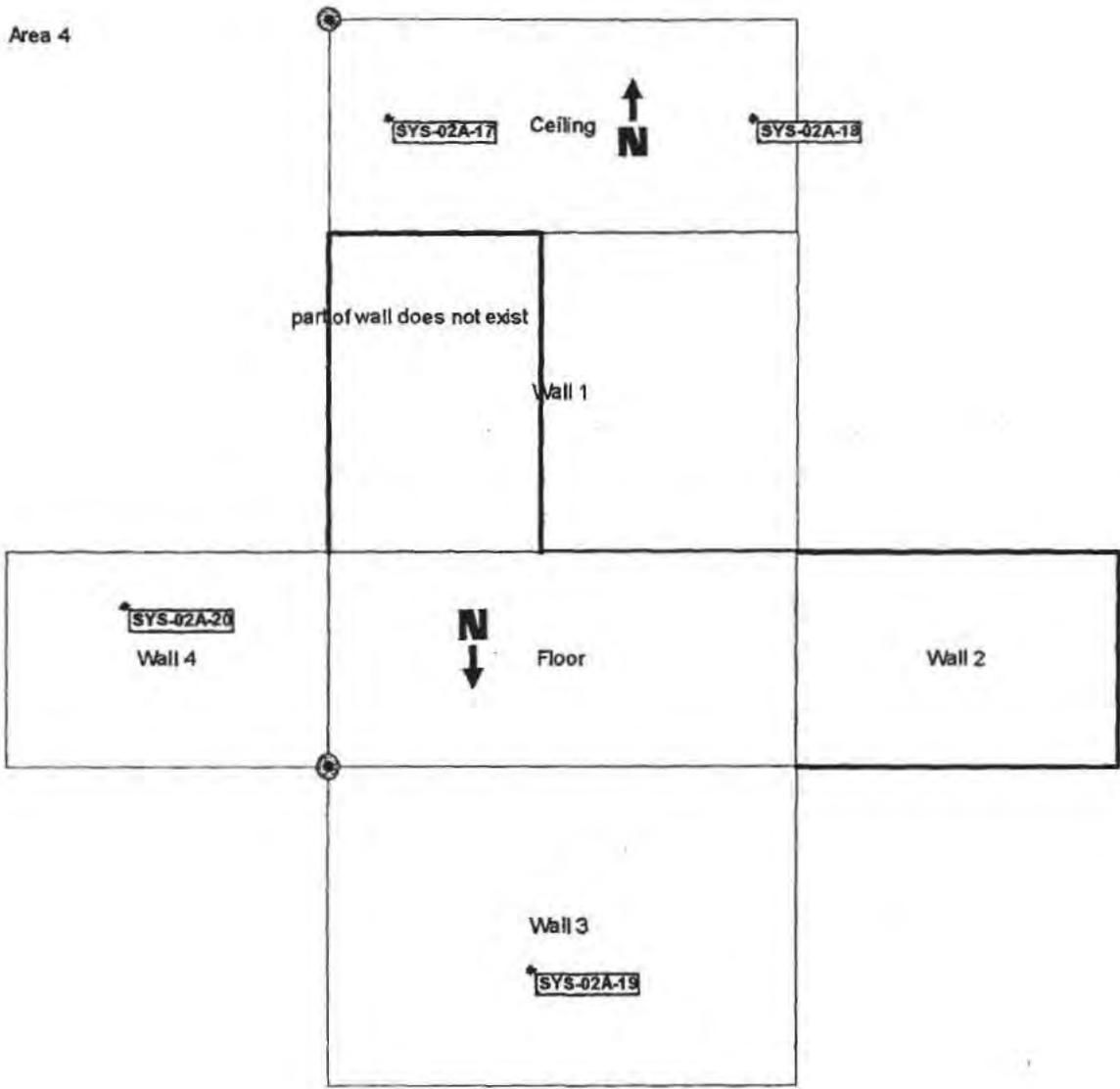
COPY

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MIT-06-0566

SYS-02A-01
lower static measurement locations

Area 4



COPY

F108/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T-BLD6 99 crawlspace	SURVEY NO.	MT-06-0567
PURPOSE:	D.V.Q's	RWP NO.	N/A
	SY502A	DATE:	6-03-06
		TIME:	1300

MAP / DRAWING

SEE ATTACHED.

NO DRAINS IN AREA 1, 3, 4
 ONLY 1 DRAIN IN AREA 2
 OF SURVEY UNIT. NO
 VENTS OR UTILITIES IN AREAS 1, 2, 3, 4

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - - = radiological boundary



= mrem/hr neutron



= swipe number



= air sample number



#/alpha or #/beta = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5922/5926	5/21/07 ✓
N/A		

Completed by: (Signature)	<i>[Signature]</i>	Date:	6-3-06
Completed by: (Print Name)	S. Richardson		
Counted by: (Signature)	<i>[Signature]</i>	HP#	N/A
Counted by: (Print Name)	SEE ATTACHED	Date:	N/A
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-9-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

F110/353

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060605_0843.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0567.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY

F112/353

19 30 = 8
MT-06-0567

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/5/06	8:44:23 AM	-1	10.00		9	8	12	10	607.34	0	21.5	B	1
6/5/06	8:55:14 AM	0	2.00		245	233	0	0	537.72	478	9.2		1
6/5/06	8:57:56 AM	✓ 1	2.00		0	0	0	8	636.39	0	0.0		1

✓

COPY

T 113/359

pa 4018
MT 06-0567

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_148
Batch Ended: 6/5/06 7:51
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0567 [1] RICHARDSON 6-5-06 RLH ←

Detector ID	Sample ID	Alpha Activity		
		DPM	σ	flags
AI	1	1.96	2.18	

Beta Activity		
DPM	σ	flags
0.00	1.32	

COPY

F114/353

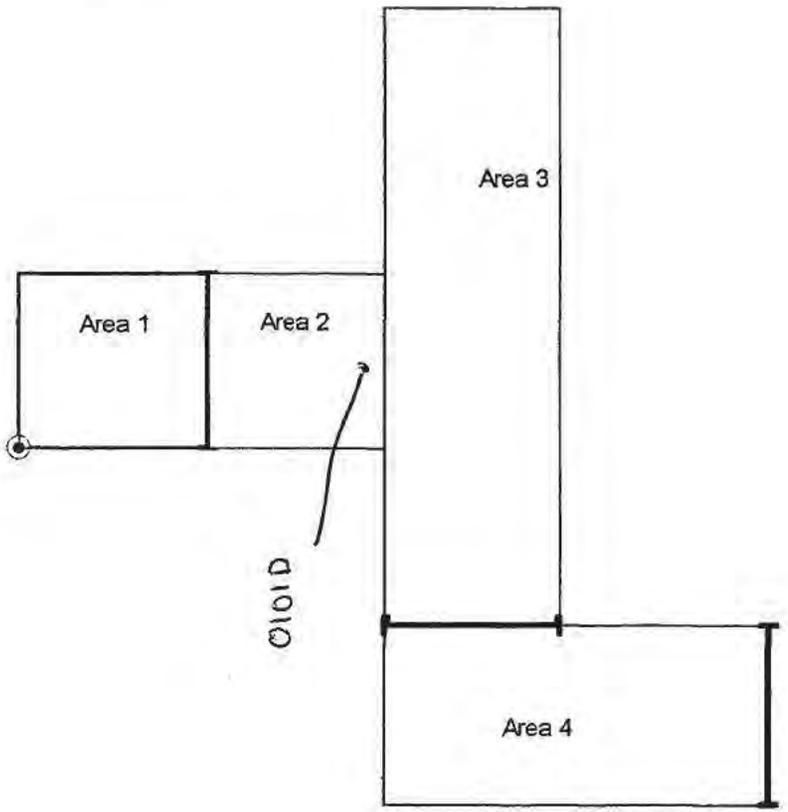
6-5-06
Page 1 of 1

pg 501-8
MT-06-0567
RLH

pg 8 of 8

MT-06-056-1950-00-10

SYS-02A Drains, vents, and utilities Class 2



COPY

F117/353

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RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 9/10

W96/19/06

LOCATION: (BLDG/AREA/ROOM) <u>TBL06 West Head House</u>	SURVEY NO. <u>MT-06-0569</u>
PURPOSE: <u>Station and judgements for Resrad areas 5-9</u>	RWP NO. <u>N/A</u>
<u>SY502A</u>	DATE: <u>6/5/06</u>
	TIME: <u>0610</u>

MAP / DRAWING

Reference MT-06-0550 for Resrad sample results on page 6 of 12

See attached map

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

\triangle # = mrem/hr neutron # = swipe number
 # = air sample number # α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5420/5929	11/15/06
	5920	

Completed by: (Signature) <u>Wayne Jones</u>	Date: <u>6/5/06</u>
Completed by: (Print Name) <u>Wayne Jones / Scott Hollasbaugh</u>	
Counted by: (Signature) <u>See attached</u>	HP# <u>N/A</u> Date:
Counted by: (Print Name)	
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>6-14-06</u>
Reviewed/Approved by: (Print Name) <u>[Name]</u>	

F187 353

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	B ² /γ	Alpha	Tritium	
1				SY502A10S
2				SY502A11S
3				SY502A12S
4				SY502A13S
5				SY502A14S
6				SY502A15S
7				SY502A16S
8				SY502A17S
9				SY502A18S
10				SY502A19S
11				SY502A20S
12				SY502A21S
13				SY502A22S
14				SY502A0101S
15				SY502A0102S
16				SY502A0103S
17				SY502A0104S
18				SY502A0105S
/				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	B ² /γ	Alpha	Tritium	
/				

COMMENTS:

N/A

COPY

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. (if not needed, mark N/A).

pg 308 Q.10
wg
6/19/06

6950-90-1-0569

COPY

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_153
Batch Ended: 6/5/06 9:25
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0569 [18] W. JONES 6-5-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	1.95	2.18		0.00	1.31	
A2	2	0.00	2.00		0.00	1.17	
A3	3	4.25	3.23		2.45	2.52	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.91		1.44	2.06	
B2	6	1.69	1.89		1.39	1.93	
B3	7	0.00	2.20		0.27	1.88	
B4	8	0.00	1.95		0.00	1.20	
D1	9	0.00	2.05		0.00	1.26	
D2	10	1.93	2.16		0.00	1.20	
D3	11	0.00	2.10		0.26	1.76	
D4	12	1.71	2.07		1.43	2.03	
A1	13	4.12	3.09		0.02	1.85	
A2	14	0.00	2.03		1.52	2.02	
A3	15	0.00	2.28		0.30	1.78	
A4	16	3.98	2.98		0.26	1.71	
B1	17	5.27	3.27		3.17	2.66	
B2	18	1.69	1.85		0.00	1.12	

wg

wg

F120/353

RLH

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 580

MARSSIM Smear Data

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MT-06-0569
W8
11/8/07
pg 4 of 6

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060605_1210.results
Comma-Delimited File Name: D:\MARSSIM LSC\MT-06-0569.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2st
Pre-Count Delay (min): 0.00

Quench Set:

Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

F121/353

01

MARSSIM Smear Data

COPY

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/5/06	12:11:14 PM	-1	10.00		9	9	10	3	613.40	0	20.7	B	2
6/5/06	12:22:04 PM	0	2.00		38	37	0	4	540.29	74	26.0		2
6/5/06	12:24:48 PM	1	2.00		7	8	0	0	457.42	15	85.6		2
6/5/06	12:27:31 PM	2	2.00		2	2	0	0	614.09	3	306.5		2
6/5/06	12:30:14 PM	3	2.00		6	4	1	0	597.62	11	98.3		2
6/5/06	12:32:57 PM	4	2.00		5	5	0	0	457.32	10	121.0		2
6/5/06	12:35:41 PM	5	2.00		1	1	0	0	457.23	1	873.6		2
6/5/06	12:38:24 PM	6	2.00		0	0	0	5	439.94	1	1536.3		2
6/5/06	12:41:08 PM	7	2.00		1	1	0	0	494.42	1	665.4		2
6/5/06	12:43:52 PM	8	2.00		5	5	4	0	568.86	10	111.0		2
6/5/06	12:46:34 PM	9	2.00		4	3	0	0	552.59	8	133.4		2
6/5/06	12:49:18 PM	10	2.00		5	4	1	0	465.60	10	121.0		2
6/5/06	12:52:01 PM	11	2.00		5	5	3	0	577.75	9	121.0		2
6/5/06	12:54:45 PM	12	2.00		5	5	1	0	484.40	11	111.0		2
6/5/06	12:57:29 PM	13	2.00		5	5	2	0	409.82	11	117.8		2
6/5/06	1:00:12 PM	14	2.00		7	7	0	3	450.92	14	89.8		2
6/5/06	1:02:57 PM	15	2.00		10	9	3	3	417.69	23	64.4		2
6/5/06	1:05:40 PM	16	2.00		0	0	0	5	431.41	0	0.0		2
6/5/06	1:08:45 PM	17	2.00		47	41	1	1	450.78	101	22.9		2
6/5/06	1:11:28 PM	18	2.00		10	10	1	0	542.80	20	64.4		2

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6/9/06
6/11/06
6950-90-1W

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SYS-02A

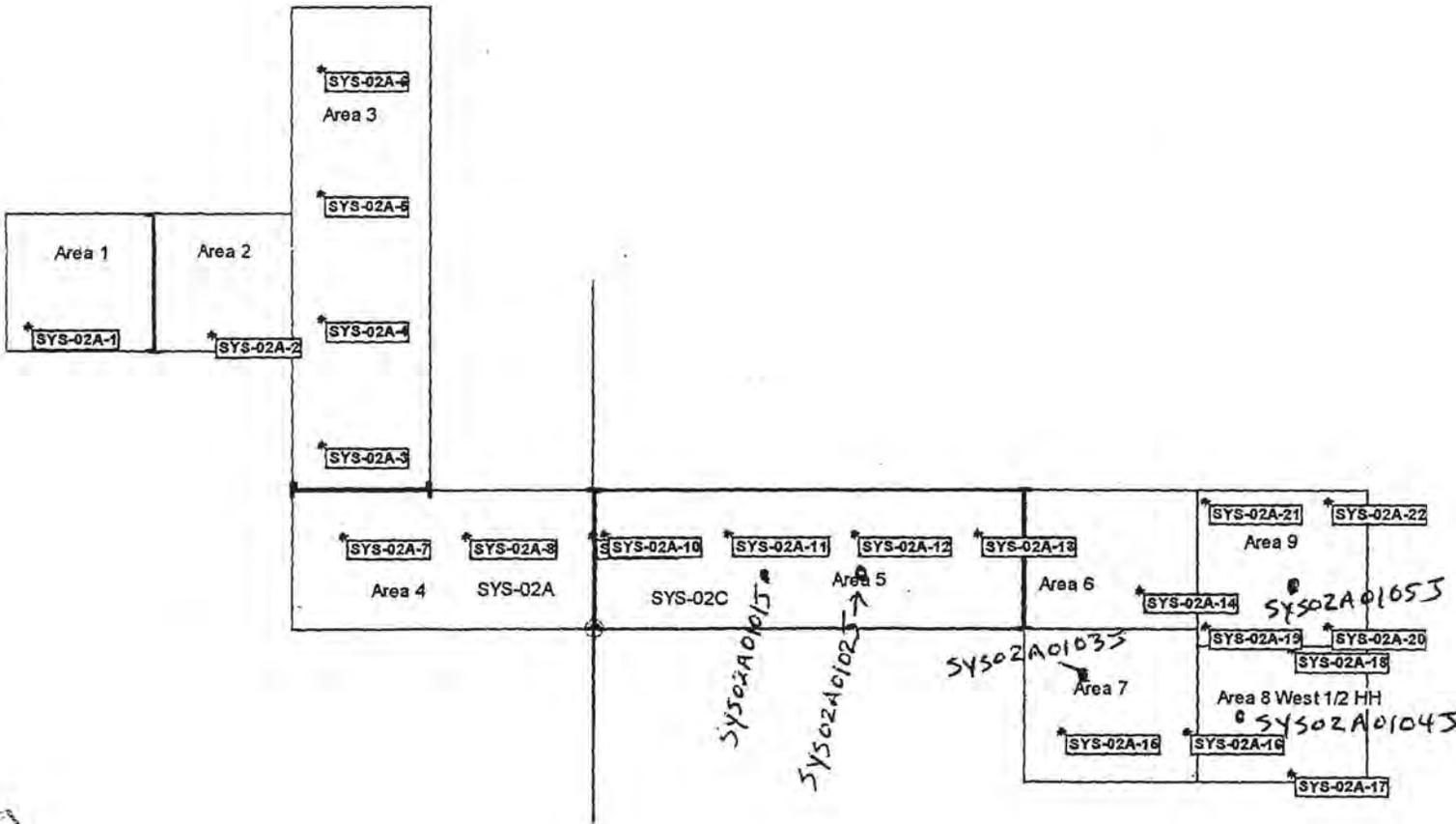
static measurement locations for core sampling

After a direct alpha and beta measurement are taken and the smear is taken, then collect a bulk sample at the highest 20% (maximum # of 10) elevated activity areas identified on the floor. Composite bulk sample with bulk samples taken at static locations on the floor. then collect a bulk sample by drilling 1" deep at each static location on the floor. Composite samples from 1" location into 1 sample container. Then repeat sampling at each location going a depth of 6". Composite samples from 6" location into 1 sample container

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MT-06-0569



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MT-06-0569

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wg
6/19/06

SYS-02A

static measurement locations for core sampling

Area: Area 1

Label	Type	Surface	LX	LY	
SYS-02A-1	Systematic	Floor		1	1

Area: Area 2

Label	Type	Surface	LX	LY	
SYS-02A-2	Systematic	Floor		3	1

Area: Area 3

Label	Type	Surface	LX	LY	
SYS-02A-3	Systematic	Floor		2	3
SYS-02A-4	Systematic	Floor		2	10
SYS-02A-5	Systematic	Floor		2	17
SYS-02A-6	Systematic	Floor		2	24

Area: Area 4

Label	Type	Surface	LX	LY	
SYS-02A-7	Systematic	Floor		3	5
SYS-02A-8	Systematic	Floor		10	5
SYS-02A-9	Systematic	Floor		17	5

Area: area 5

Label	Type	Surface	LX	LY	
SYS-02A-10	Systematic	Floor		1	6
SYS-02A-11	Systematic	Floor		8	6
SYS-02A-12	Systematic	Floor		15	6
SYS-02A-13	Systematic	Floor		22	6

Area: Area 6

Label	Type	Surface	LX	LY	
SYS-02A-14	Systematic	Floor		7	2

Area: Area7

Label	Type	Surface	LX	LY	
SYS-02A-15	Systematic	Floor		2	3
SYS-02A-16	Systematic	Floor		9	3

Area: Area 8

Label	Type	Surface	LX	LY	
-------	------	---------	----	----	--

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Floor/353

MT-06-0569

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6/19/06

SYS-02A-17	Systematic	Floor	6	1
SYS-02A-18	Systematic	Floor	6	8

Area: Area 9

Label	Type	Surface	LX	LY
SYS-02A-19	Systematic	Floor	0	1
SYS-02A-20	Systematic	Floor	8	1
SYS-02A-21	Systematic	Floor	0	8
SYS-02A-22	Systematic	Floor	8	8

COPY

F105/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) <i>T Bldg Headhouse Tunnel</i>	SURVEY NO. <i>MT-06-0247</i>
PURPOSE: <i>MARSIMS - Judgemental</i> <i>Unit SYSAO 54502B</i> <i>GH 2-27-06</i>	RWP NO. <i>NA</i>
	DATE: <i>2-27-06</i>
	TIME: <i>0800</i>

MAP/DRAWING

See attached sheets for survey results

ELEVATED α levels detected
54502B01T1 - 54502B06T1

54502B11WW - 54502B13WW
ELEVATED B' levels detected
54502B13WW

Reference RSDS # *MT-06-0248* for follow-up results.

- 01T1 = 01T*
- 02T1 = 02T*
- 03T1 = 03T*
- 04T1 = 04T*
- 05T1 = 05T*
- 06T1 = 06T*
- 11WW = 11W* 6-28-06
- 12WW = 12W*
- 13WW = 13W*
- 14WW = 14W*
- 15WW = 15W*

Reference RSDS *MT-06-0598*
for 1000 follow up for
11ww, 12ww, 13ww, 14ww, 15ww

COPY

LEGEND: # = mrem/hr (γ) whole body Δ # = mrem/hr neutron (#) = swipe number
 # E = mrem/hr ($\beta + \gamma$) extremity on contact # = air sample number (#/a) or β/β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<i>L 2350</i>	<i>5920/5929</i>	<i>11-15-06</i>
<i>NA</i>		

Completed by: (Signature) <i>Keay & Hodge</i>	HP#	Date: <i>2-27-06</i>
Completed by: (Print Name) <i>George Hodges</i>		
Counted by: (Signature) <i>see</i>	HP# <i>N/A</i>	Date: <i>N/A</i>
Counted by: (Print Name) <i>attached</i>		
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	HP#	Date: <i>3-13-06</i>
Reviewed/Approved by: (Print Name) <i>Jerry Taylor</i>		

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RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
1	see attached	charts		01T1
2				02T1
3				03T1
4				04T1
5				05T1
6				06T1
7				07T2
8				08T2
9				09T2
10				10T2
11				11WW
12				12WW
13				13WW
14				14WW
15	↓	↓	↓	15WW
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
N/A				

COMMENTS:

N/A

COPY

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_4\20060227_2035.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0247.001 *GH*
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_4.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY

F130/553

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RLH



MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

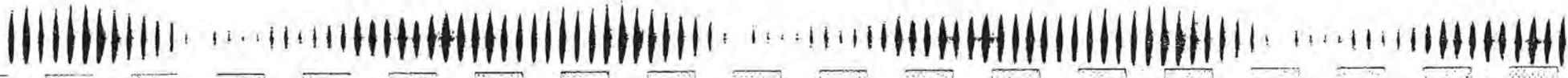
DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
2/27/06	8:36:09 PM	-1	10.00		10	9	12	10	637.07	0	19.5	B	4
2/27/06	8:46:59 PM	0	2.00		196	187	6	1	552.14	377	10.4		4
2/27/06	8:49:43 PM	1	2.00		21	21	0	3	622.75	38	39.4		4
2/27/06	8:52:25 PM	2	2.00		14	13	0	4	624.61	25	53.5		4
2/27/06	8:55:08 PM	3	2.00		0	0	0	5	624.98	0	0.0		4
2/27/06	8:58:08 PM	4	2.00		22	19	0	3	536.79	43	37.8		4
2/27/06	9:00:51 PM	5	2.00		25	23	8	3	489.84	51	34.7		4
2/27/06	9:03:34 PM	6	2.00		35	34	11	1	504.16	70	27.9		4
2/27/06	9:06:17 PM	7	2.00		11	10	0	5	642.93	19	64.7		4
2/27/06	9:09:01 PM	8	2.00		61	53	1	1	612.87	111	20.0		4
2/27/06	9:11:44 PM	9	2.00		115	107	0	1	531.24	225	13.9		4
2/27/06	9:14:27 PM	10	2.00		70	62	0	1	627.99	126	18.4		4
2/27/06	9:17:10 PM	11	2.00		23	23	1	3	560.24	44	36.5		4
2/27/06	9:19:55 PM	12	2.00		9	8	5	5	584.14	17	72.9		4
2/27/06	9:22:37 PM	13	2.00		11	9	0	5	559.79	20	64.7		4
2/27/06	9:25:19 PM	14	2.00		9	7	3	8	547.92	16	76.3		4
2/27/06	9:28:02 PM	15	2.00		17	15	3	4	554.14	32	46.2		4

CH

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MT-06-0247



Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_114
 Batch Ended: 2/27/06 16:22
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

GH
 Batch ID: MT-06-0247 HODGES (15) AG

Detector ID	Sample ID
A1	1
A2	2
A3	3
A4	4
B1	5
B2	6
B3	7
B4	8
C1	9
C2	10
C4	11
D1	12
D2	13
D3	14
D4	15

Alpha Activity		
DPM	σ	flags
0.00	2.18	
1.61	2.00	
0.00	2.26	
0.00	2.13	
8.90	4.17	
12.50	4.92	
0.00	2.18	
0.00	1.99	
0.00	2.05	
0.00	1.92	
1.68	1.95	
5.83	3.55	
1.74	2.19	
1.72	2.10	
3.57	2.91	

Beta Activity		
DPM	σ	flags
0.00	1.31	
0.00	1.16	
0.00	1.26	
1.69	2.09	
0.00	1.68	
2.14	2.49	
0.00	1.33	
1.60	2.07	
0.00	1.23	
0.47	1.59	
0.00	1.12	
0.00	1.25	
2.62	2.38	
0.02	1.75	
2.25	2.35	

GH

GH

COPY

F132/353

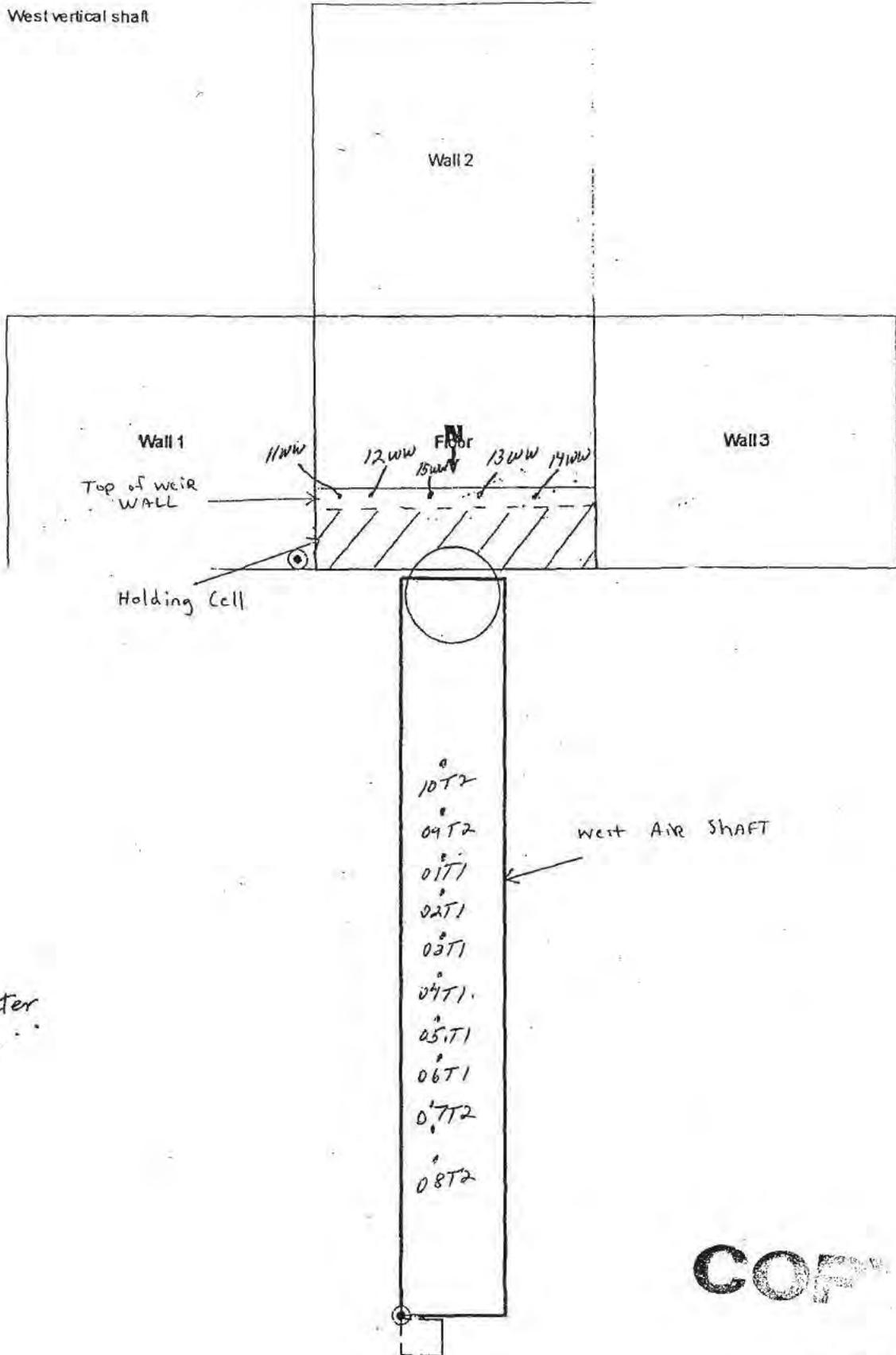
Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	PCT ID	PROBE	DET #	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02B01T1	5920		5929	1 1	2/27/2006	9:21	137	120	518
ALPHA	SYS02B02T1	5920		5929	1 2	2/27/2006	9:26	200	120	756
ALPHA	SYS02B03T1	5920		5929	1 3	2/27/2006	9:31	152	120	574
ALPHA	SYS02B04T1	5920		5929	1 4	2/27/2006	9:36	414	120	1565
ALPHA	SYS02B05T1	5920		5929	1 5	2/27/2006	9:40	221	120	835
ALPHA	SYS02B06T1	5920		5929	1 6	2/27/2006	12:35	265	120	1002
ALPHA	SYS02B07T2	5920		5929	1 7	2/27/2006	12:49	12	120	45
ALPHA	SYS02B08T2	5920		5929	1 8	2/27/2006	12:55	12	120	45
ALPHA	SYS02B09T2	5920		5929	1 9	2/27/2006	13:24	13	120	49
ALPHA	SYS02B10T2	5920		5929	1 10	2/27/2006	13:28	13	120	49
ALPHA	SYS02B11WW	5920		5929	1 11	2/27/2006	13:37	115	120	435
ALPHA	SYS02B12WW	5920		5929	1 12	2/27/2006	13:49	194	120	733
ALPHA	SYS02B13WW	5920		5929	1 13	2/27/2006	13:52	58	120	219
ALPHA	SYS02B14WW	5920		5929	1 14	2/27/2006	13:56	51	120	193
ALPHA	SYS02B15WW	5920		5929	1 15	2/27/2006	14:32	2334	120	8821
BETA	SYS02B01T1	5920		5929	2 1	2/27/2006	9:22	186	60	1845
BETA	SYS02B02T1	5920		5929	2 2	2/27/2006	9:27	203	60	2014
BETA	SYS02B03T1	5920		5929	2 3	2/27/2006	9:32	153	60	1518
BETA	SYS02B04T1	5920		5929	2 4	2/27/2006	9:37	186	60	1845
BETA	SYS02B05T1	5920		5929	2 5	2/27/2006	9:42	189	60	1875
BETA	SYS02B06T1	5920		5929	2 6	2/27/2006	12:36	243	60	2411
BETA	SYS02B07T2	5920		5929	2 7	2/27/2006	12:50	143	60	1419
BETA	SYS02B08T2	5920		5929	2 8	2/27/2006	12:56	143	60	1419
BETA	SYS02B09T2	5920		5929	2 9	2/27/2006	13:25	126	60	1250
BETA	SYS02B10T2	5920		5929	2 10	2/27/2006	13:29	119	60	1181
BETA	SYS02B11WW	5920		5929	2 11	2/27/2006	13:38	237	60	2351
BETA	SYS02B12WW	5920		5929	2 12	2/27/2006	13:50	284	60	2817
BETA	SYS02B13WW	5920		5929	2 13	2/27/2006	13:54	218	60	2163
BETA	SYS02B14WW	5920		5929	2 14	2/27/2006	13:57	231	60	2292
BETA	SYS02B15WW	5920		5929	2 15	2/27/2006	14:33	273	60	2708

N/A

COPY

SYS-02-01
West vertical exhaust air shaft



 water

COP

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
1	see	Attached		Sy502A01T
2				Sy502A02T
3				Sy502A03T
4				Sy502A04T
5				Sy502A05T
6				Sy502A06T ^{1/24/86}
7				Sy502A07U
8				Sy502A08U
9				Sy502A09U
10				Sy502A10U ^{1/24/86}
11				Sy502A11W ^{1/24/86}
12				Sy502A12W
13				Sy502A13W
14	see	Attached		Sy502A14W
15		sheet		Sy502A15W
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
N/A				

COMMENTS: N/A N/A COPY

- NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
 2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
 3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

2/27/06 8:12:42 PM

QuantaSmart (TM) - 1.31 - Serial# 423022

Page #1

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060227_1918.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0248.001 *CG*
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

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F138/353

RLH



MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

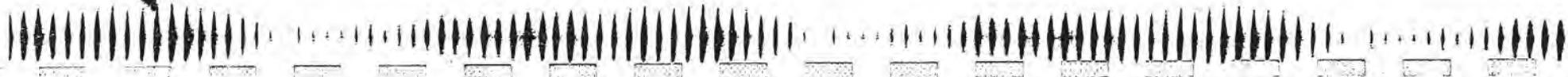
Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
2/27/06	7:18:36 PM	-1		10.00	9	8	12	4	630.47	0	21.1	B	2
2/27/06	7:29:24 PM	0		2.00	176	166	0	2	559.30	338	11.0		2
2/27/06	7:32:07 PM	1		2.00	11	9	0	3	620.57	20	61.2		2
2/27/06	7:34:50 PM	2		2.00	1	0	0	10	656.29	1	594.8		2
2/27/06	7:37:33 PM	3		2.00	4	4	1	4	668.78	7	135.7		2
2/27/06	7:40:15 PM	4		2.00	4	3	0	8	636.85	7	135.7		2
2/27/06	7:42:57 PM	5		2.00	2	2	0	9	650.50	4	251.9		2
2/27/06	7:45:39 PM	6		2.00	11	10	0	5	635.66	19	62.1		2
2/27/06	7:48:21 PM	7		2.00	9	7	0	6	626.45	16	71.1		2
2/27/06	7:51:04 PM	8		2.00	4	3	0	8	625.99	6	152.4		2
2/27/06	7:53:47 PM	9		2.00	3	2	0	13	667.88	5	174.6		2
2/27/06	7:56:30 PM	10		2.00	0	0	0	12	636.48	0	0.0		2
2/27/06	7:59:14 PM	11		2.00	4	2	2	8	681.91	7	135.7		2
2/27/06	8:01:56 PM	12		2.00	1	0	0	11	668.66	1	934.2		2
2/27/06	8:04:38 PM	13		2.00	4	3	0	8	657.97	6	152.4		2
2/27/06	8:07:21 PM	14		2.00	0	0	0	17	665.05	0	0.0		2
2/27/06	8:10:04 PM	15		2.00	0	0	0	13	672.86	0	0.0		2

Ud
2-24-06

F139/353

COPY



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Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar 115
Batch Ended: 2/27/06 16:29
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0248 WEISENBURG (15) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	1.72	2.18		0.00	1.31	
A2	2	0.00	2.03		1.51	2.01	
A3	3	0.00	2.26		0.00	1.26	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.89		0.04	1.68	
B2	6	0.00	1.85		0.00	1.12	
B3	7	0.00	2.26		4.16	2.97	
B4	8	0.00	1.95		0.00	1.19	
C1	9	0.00	2.06		0.26	1.74	
C2	10	0.00	1.91		0.00	1.13	
C4	11	1.68	1.99		2.72	2.25	
D1	12	1.75	2.06		0.15	1.77	
D2	13	0.00	2.15		0.00	1.19	
D3	14	0.00	2.13		2.66	2.48	
D4	✓ 15	0.00	2.04		0.00	1.17	

GW
2-28-06

GW

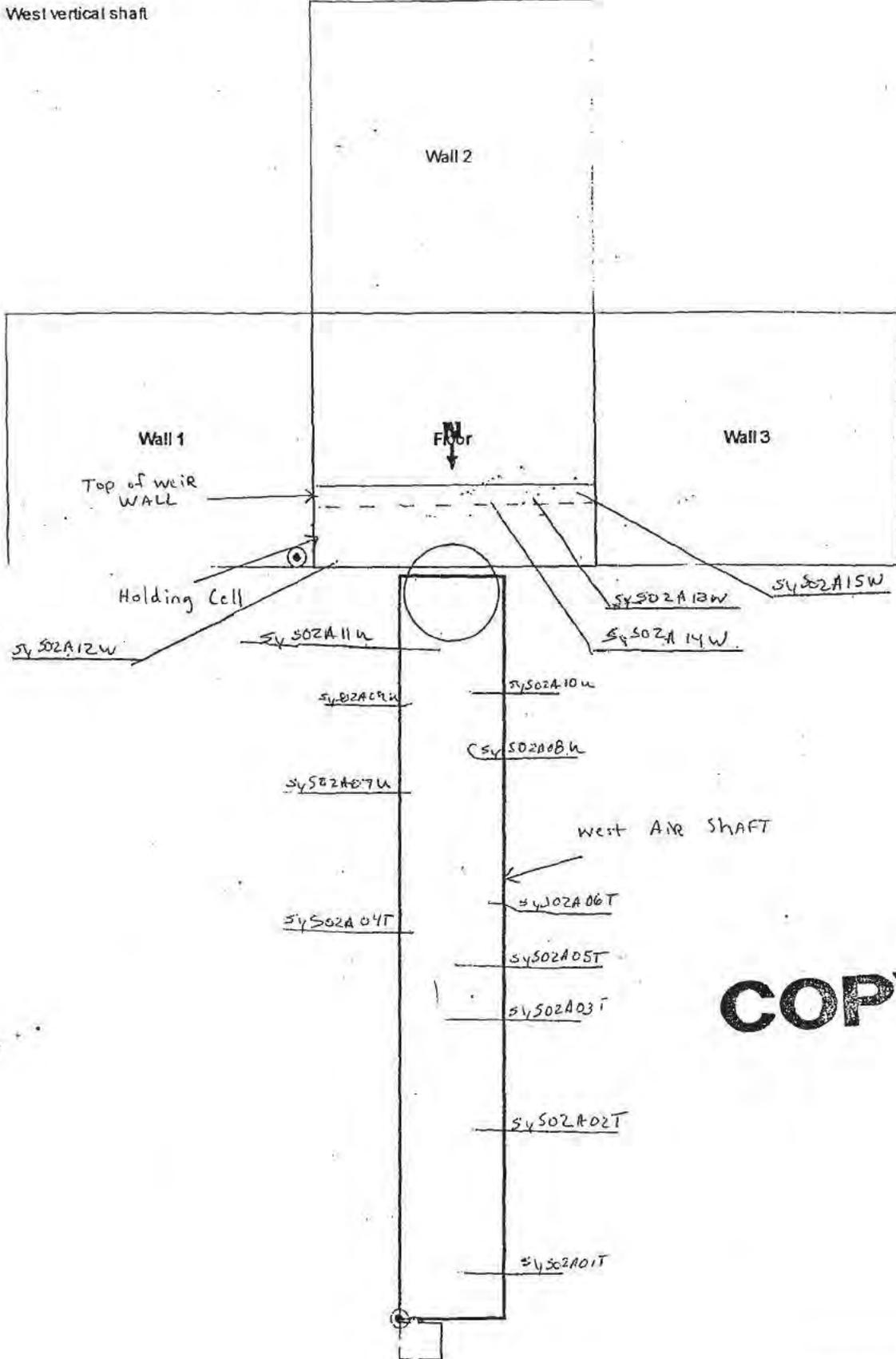
COPY

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AW

SYS-02-01

West vertical exhaust air shaft



COPY

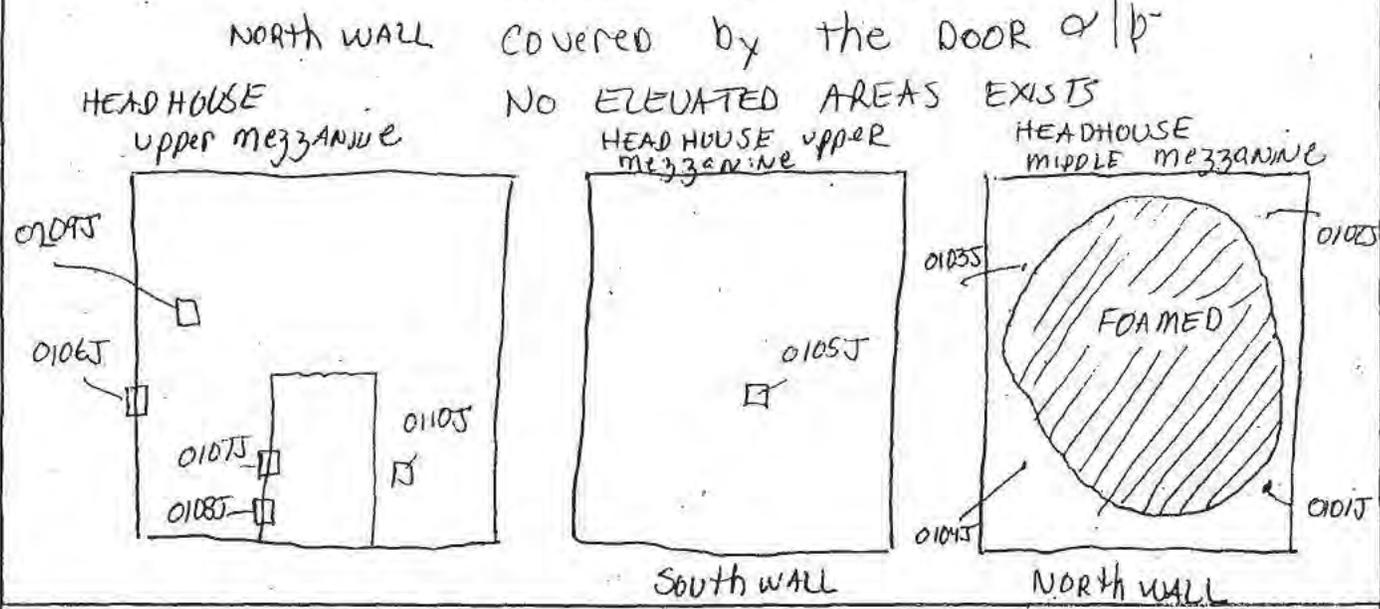
RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T-BLDG HEAD HOUSE	SURVEY NO. MT-06-0520
PURPOSE: Judgemental + SEAN SX502B	RWP NO. N/A
	DATE: 5-13-06
	TIME: 1000

Post Remediation Survey MAP / DRAWING
 REF. MT-06-0551
 0108J = ~~0108J~~ = 102PR
 0209J = ~~0109J~~ = 0209PR SEE ATTACHED.

SCANNED 1m² AROUND EACH POINT, AND THE ENTIRE SURFACE THAT WILL BE COVERED BY THE DOOR & /P-

NO ELEVATED AREAS EXISTS



LEGEND:
 # = mrem/hr (γ) whole body
 #E = mrem/hr (β+γ) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

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△ # = mrem/hr neutron # = swipe number
 □ # = air sample number #/α or β = direct contamination measurement in dpm/100cm²

INSTRUMENTS USED		
Instrument	Serial Number	Cal. Due Date
2350	5923 / 5925	5 / 17 / 06
	M	
	A	

Completed by: (Signature) <i>Richard Sin</i>	Date: 5-13-06
Completed by: (Print Name) RICHARD SIN	
Counted by: (Signature) SEE ATTACHED	HP# N/A Date: N/A
Counted by: (Print Name) SHEETS	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: 5-23-06
Reviewed/Approved by: (Print Name) Jerry Taylor	

F444/353

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060515_0943.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0520.001 ✓
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY
F116/353

Pg 3 of 7

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

MT-05-0520

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/15/06	9:44:21 AM	-1		10.00	10	9	11	13	605.88	0	19.6	B	1
5/15/06	9:55:11 AM	0		2.00	291	280	1	0	534.02	570	8.5		1
5/15/06	9:57:54 AM	1		2.00	47	21	0	2	623.08	86	23.2		1
5/15/06	10:00:36 AM	2		2.00	9	8	0	3	620.32	16	76.1		1
5/15/06	10:03:17 AM	3		2.00	2	2	0	0	646.84	3	345.0		1
5/15/06	10:06:00 AM	4		2.00	2	2	0	4	606.59	3	345.0		1
5/15/06	10:08:42 AM	5		2.00	0	2	0	5	626.34	1	1525.0		1
5/15/06	10:11:24 AM	6		2.00	0	1	0	0	607.07	0	*****		1
5/15/06	10:14:07 AM	7		2.00	0	0	0	7	592.81	0	0.0		1
5/15/06	10:16:50 AM	8		2.00	0	0	0	5	613.21	0	*****		1
5/15/06	10:19:33 AM	9		2.00	0	0	0	6	625.98	0	0.0		1
5/15/06	10:22:15 AM	10		2.00	9	8	0	3	631.97	16	72.7		1

h

COPY

F147 | 353

*pg 4 of 7
MT-05-0520*

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_099
Batch Ended: 5/15/06 8:58
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0520 [10] RICHARDSON 5-15-06 RLH ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
B1	1	0.00	1.91		1.44	2.06	
B2	2	0.00	1.85		0.00	1.12	
B3	3	0.00	2.18		0.00	1.34	
B4	4	0.00	1.95		0.00	1.20	
C1	5	0.00	2.09		1.11	2.18	
C2	6	0.00	1.95		1.63	1.99	
C3	7	0.00	2.17		4.23	2.83	
C4	8	0.00	1.99		0.45	1.61	
D1	9	0.00	2.05		0.00	1.26	
D2	✓ 10	0.00	2.15		0.00	1.20	

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F148/353

p9 50F7

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>TBLDG West Head House</u>	SURVEY NO. <u>MT-06-0551</u>
PURPOSE: <u>Follow up to 3 SCM spots AND 2 spots Checked with 2350 Post Remediation 5/30/06</u>	RWP NO. <u>N/A</u>
	DATE: <u>5/30/06</u>
	TIME: <u>1220</u>

MAP / DRAWING

NO ELEVATED α/β levels detected DURING SC
 SCM WALL SCAN up to 12' α/β
 Reference MT-06-0520 (5/30/06) ^{J up/06} ~~0108J = 0102 PR, 0109J = 0209 PR~~ ^{J up/06}
 0209J = 0202 PR ^{SH 6-24-06}

See attached map

COPY

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr ($\beta + \gamma + \alpha$) extremity on contact
- K = factor of 1000
- = radiological boundary
- Δ = mrem/hr neutron
- # (circle) = swipe number
- # (square) = air sample number
- #(α) or #(β) = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED		
Instrument	Serial Number	Cal. Due Date
2350	5892/5893	2/14/07 ✓
/		

Completed by: (Signature) <u>Wayne Jones</u>	Date: <u>5/30/06</u>
Completed by: (Print Name) <u>WAYNE JONES</u>	
Counted by: (Signature) <u>See attached</u>	HP#
Counted by: (Print Name) <u>"</u>	
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>6-14-06</u>
Reviewed/Approved by: (Print Name) <u>Donald K. Daily</u>	<u>F151/353</u>

MT-06-0551
Pg 3 of 10
6/15/06
JL

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_140
Batch Ended: 5/30/06 13:40
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0551 [5] W. JONES 5-30-06 RLH

Detector ID	Sample ID
A1	1
A2	2
A3	3
A4	4
B1	5

Alpha Activity		
DPM	σ	flags
0.00	2.20	
0.00	2.03	
0.00	2.28	
1.90	2.14	
0.00	1.91	

WJ

Beta Activity		
DPM	σ	flags
0.38	1.85	
1.52	2.02	
0.30	1.78	
2.83	2.41	
1.44	2.06	

WJ

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F-153/353

RLH

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060530_1443.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0551.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY

1550-90-141
MT-06-0551

5/30/06
4:25 PM
423022

FISH/353

24

MARSSIM Smear Data

MT-06-0551

COPY

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/30/06	2:44:08 PM	-1		10.00	7	6	9	3	613.70	0	24.7	B	2
5/30/06	2:54:58 PM	0		2.00	51	48	1	1	539.18	99	21.3		2
5/30/06	2:57:41 PM	1		2.00	4	3	0	0	619.51	7	123.0		2
5/30/06	3:00:25 PM	2		2.00	2	2	0	0	618.98	4	226.9		2
5/30/06	3:03:08 PM	3		2.00	1	2	3	0	656.06	3	297.2		2
5/30/06	3:05:51 PM	4		2.00	84	75	4	0	641.30	150	16.2		2
5/30/06	3:08:34 PM	5		2.00	5	5	0	0	664.66	9	103.2		2

wj

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15551-90-1 M

F155/353

SYS-02B West Headhouse

Scan 100% of floor and walls up to 2 meters *6/15/04*

scan 25% of walls above 2 meters *6/15/04*

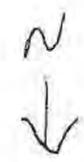
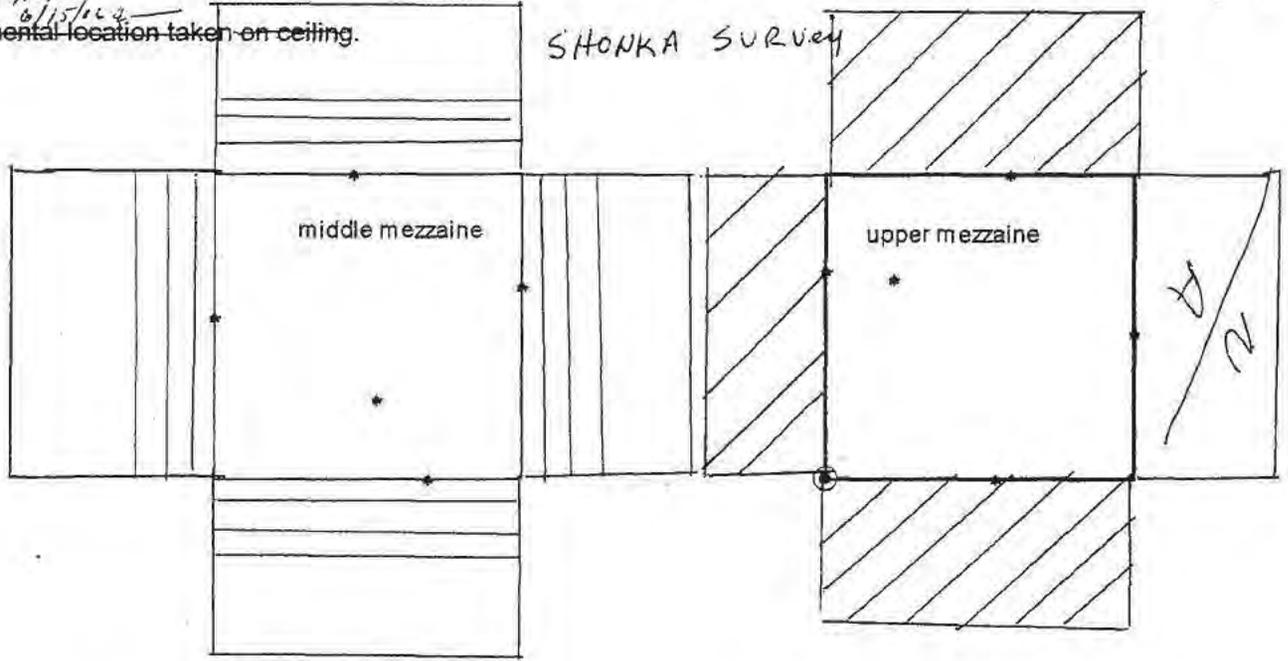
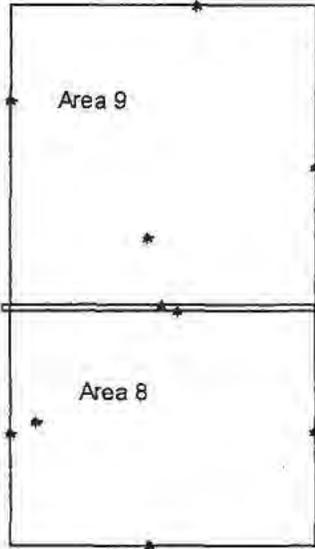
can 1m2 around any static or judgmental location taken on ceiling. *6/15/04*

6'



= SHONKA SURVEY
3cm SCAN WALLS UP 12' *A/B*

SHONKA SURVEY



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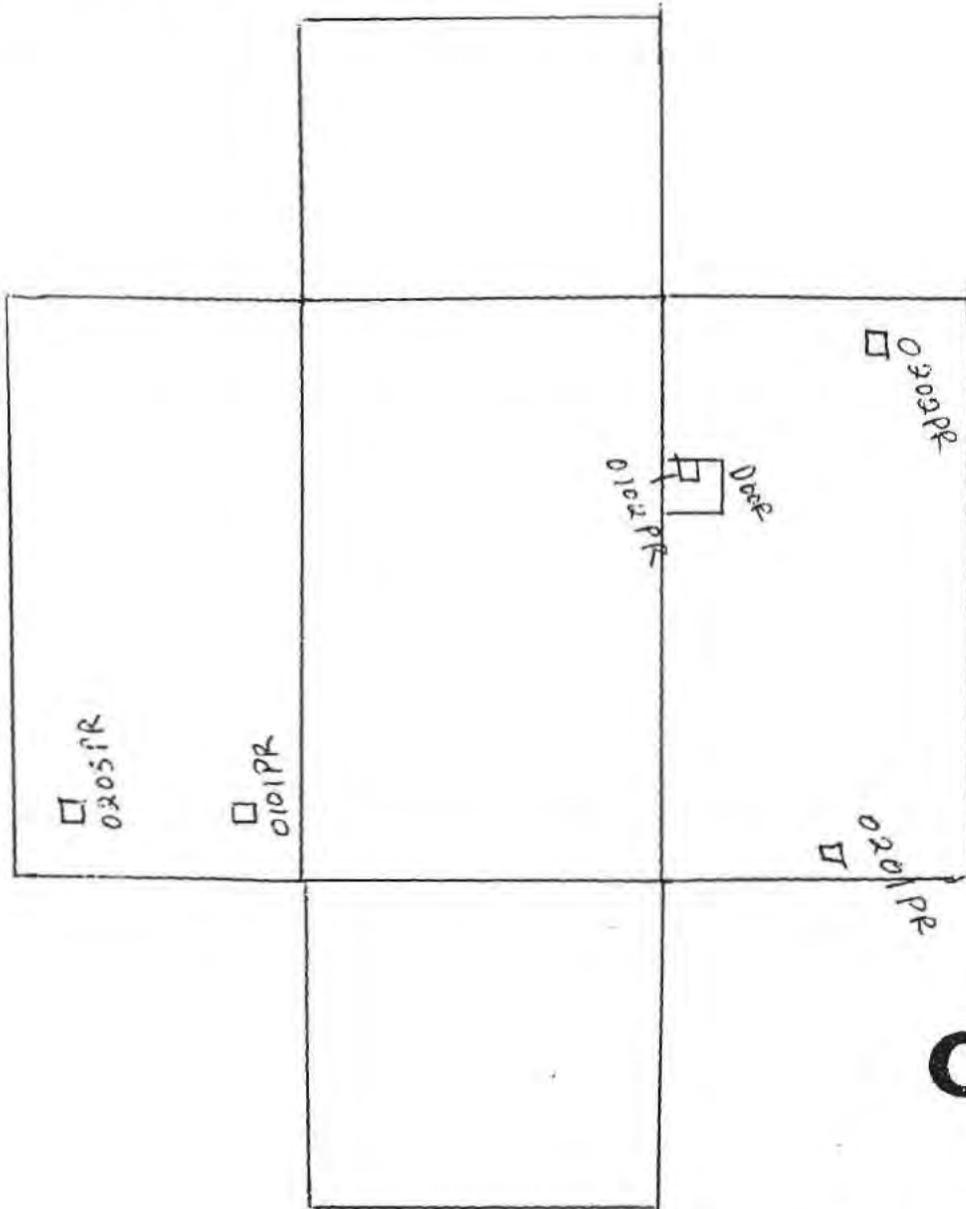
F156/353

MT-06-0551
Pg 57/10

SY502B

MT-06-0551 Pg 77/10

Follow up to 35CM spots AND 2 2350 spots
THIS IS POST REMEDIATION



COPY



F157/350

MT-06-0551
Pg 10 of 10

Surface Contamination Monitor Survey Investigation Summary Revision 0

Survey Unit: West Head House	SCM Survey Unit: 1N-99, 19-91
SCM ID	SCM 23
Calibration Due Date	06-01-06

Room	Surface	*Spots from SCM Characterization	*HH Investigations
54502B ↓ Bottom of HH	Floor	~50	
Bottom of HH	Walls	36	
54502C Bottom of Adjacent HH	Floor	100s	
54502C Bottom of Adjacent HH	Walls	28	
54502B HH Mezzanine	Walls	1 Large area near weir.	
54502C Adjacent HH Mezzanine	Walls	1	
* 54502B Top of HH	Walls	40	

*Due to the close proximity of spots one mark may include more than one spot resulting in a different number of Hand Held investigations performed.

Name Javid Kelley

Signature _____

Date 5-31-06

* AREA Surveyed

COPY

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	TBLDG West Head House	SURVEY NO.	MT-06-0562
PURPOSE:	Follow up to elevated readings during scan. North and East wall Top Mezzinen SCM 54502B	RWP NO.	N/A
		DATE:	6/2/06
		TIME:	0925

MAP / DRAWING

NO ELEVATED α/β levels Detected DURING SCAN

See attached map

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta+\eta+\gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

= mrem/hr neutron = swipe number
 = air sample number or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06
 	 	
 	 	

Completed by: (Signature)	Wayne Jones	Date:	6/2/06
Completed by: (Print Name)	WAYNE JONES		
Counted by: (Signature)	See attached	HP#	Date:
Counted by: (Print Name)			
Reviewed/Approved by: (Signature)	Ronald R. Pauly	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald R. Pauly		

F101/353 pt

MT-06-0562 Z 9950-90-LW P83087

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_150
Batch Ended: 6/5/06 7:57
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0562 [2] W. JONES 6-5-06 RLH

Detector ID	Sample ID
A1	1
A2	2

Alpha Activity		
DPM	σ	flags
0.00	2.21	
0.00	2.00	

wj

Beta Activity		
DPM	σ	flags
1.68	2.26	
0.00	1.17	

wj

COPY

F103/353

wj
6/5/06

R

Protocol# 3 - MARSSIM_Smear_3.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: C:\Packard\TriCarb\Results\~MARSSIMS
Raw Results Path: C:\Packard\TriCarb\Results\5801\MARSSIM Smear 3\20060605_0917.results
Comma-Delimited File Name: C:\Packard\TriCarb\Results\~MARSSIMS\MT-06-0562.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_3.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

COPY

pg 4 of 7

2950-90-LM

F-101/353

R

Protocol# 3 - MARSSIM_Smear_3.lsa

MARSSIM Smear Data

COPY

MT-06-0562 pg 5 of 7

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/5/06	9:17:36 AM	-1	10.00		9	9	11	4	621.25	0	20.7	B	3
6/5/06	9:28:28 AM	0	2.00		168	160	0	0	556.86	323	11.3		3
6/5/06	9:31:10 AM	1	2.00		2	2	2	0	631.63	3	305.9		3
6/5/06	9:33:54 AM	2	2.00		5	4	0	0	648.42	9	114.0		3

WJ

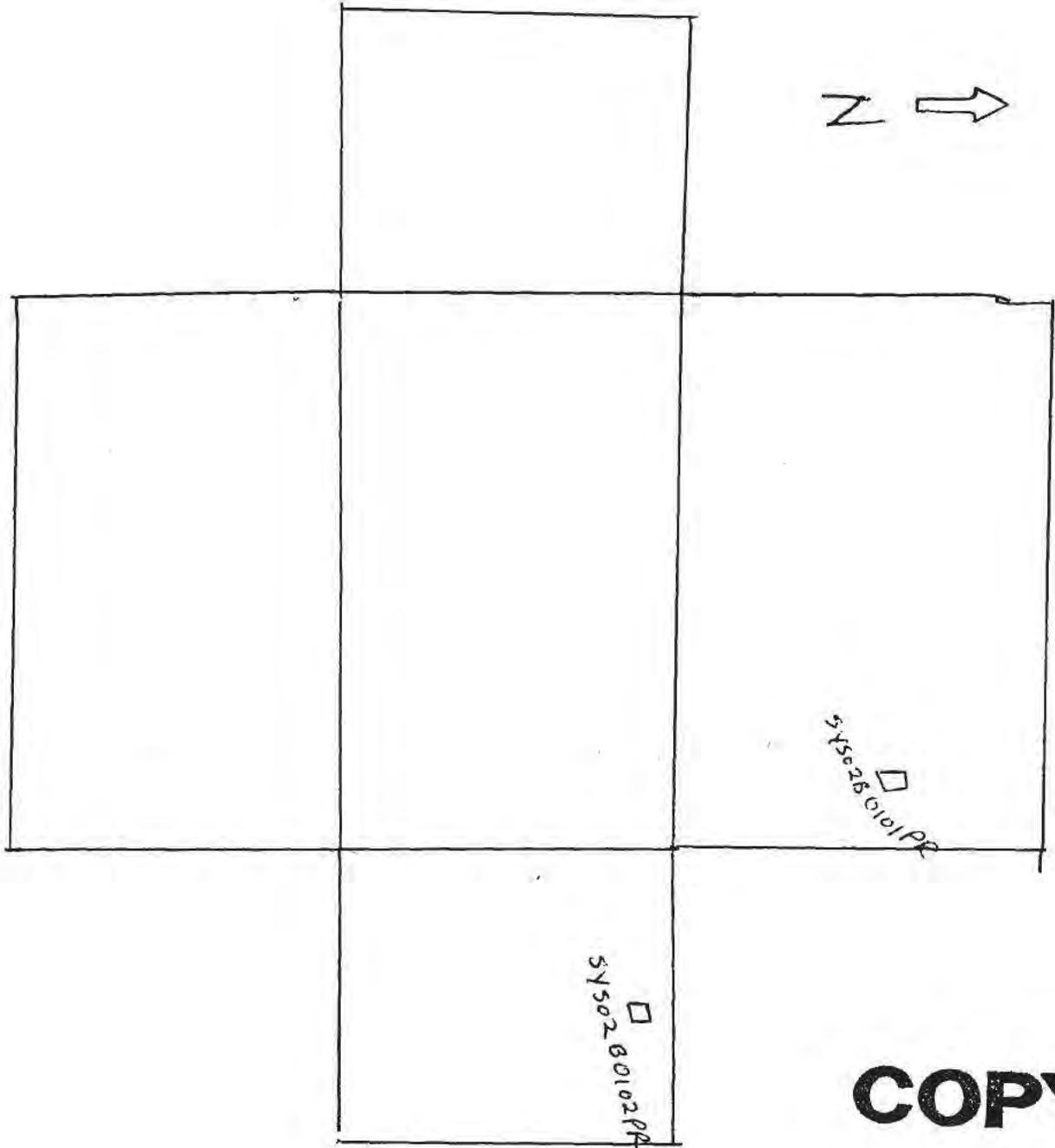
File 1353

SYS02B

MT-06-0562

pg 6 of 7

Follow up to elevated readings
during scan SCM
NORTH AND EAST WALL



COPY

F166/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T. B46 Headhouse	SURVEY NO.	MP DS 0584
PURPOSE:	LOWER STATICS AND DOSE RATE	RWP NO.	N/A
	SY502B	DATE:	6/16/06
		TIME:	1600

MAP / DRAWING

SEE ATTACHED

NOTE: 01065 IS LOCATED ON THE FLOOR. FLOOR WAS SURVEYED RESRAD.

COPY

BACKGROUND DOSE RATE = 5 μ m/hr
 MAXIMUM DOSE RATE = 5 μ m/hr

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
 # = air sample number #/a or β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
BICAN stem	3481/11483	4 12/07
2350	5922/5926	3 12/07

Completed by: (Signature)		Date:	6/16/06
Completed by: (Print Name)	Shirts		
Counted by: (Signature)	SEE ATTACHED	HP#	
Counted by: (Print Name)	SHIRTS		
Reviewed/Approved by: (Signature)		Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald K. Paris		FILED/353

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	Beta	Alpha	Tritium	
1	SEE ATTACHED			01175
2				01185
3				01195
4				01205
5				01125
6				01135
7				01145
8				01155
9				01165
10				01115
11				01105
12				01085
13				01075
14				01065
15				01095
16				01055
17				01045
18				01035
19				01025
20	SEE ATTACHED			01015
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	Beta	Alpha	Tritium	
N/A				

COPY

COMMENTS:

N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for beta, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: C:\Packard\TriCarb\Results\~MARSSIMS
Raw Results Path: C:\Packard\TriCarb\Results\5801\MARSSIM_Smear_3\20060616_1702.results
Comma-Delimited File Name: C:\Packard\TriCarb\Results\~MARSSIMS\MT-06-0584.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_3.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s#
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

COPY

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

F170/353

PA 30F14
MT-06-0584

AM

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tsIE	DPM1	A:2S%	MESSAGES	P#
6/16/06	5:03:24 PM	-1		10.00	10	9	10	7	620.30	0	20.5	B	3
6/16/06	5:14:13 PM	0		2.00	163	155	1	0	554.80	313	11.5		3
6/16/06	5:16:55 PM	1		2.00	4	3	0	4	604.01	8	126.2		3
6/16/06	5:19:39 PM	2		2.00	0	0	4	6	622.59	0	0.0		3
6/16/06	5:22:22 PM	3		2.00	0	0	0	6	631.43	0	0.0		3
6/16/06	5:25:04 PM	4		2.00	0	0	0	7	633.09	0	0.0		3
6/16/06	5:27:47 PM	5		2.00	3	2	0	8	627.36	5	180.7		3
6/16/06	5:30:30 PM	6		2.00	0	0	2	0	601.19	0	0.0		3
6/16/06	5:33:12 PM	7		2.00	0	0	2	0	632.68	0	0.0		3
6/16/06	5:35:55 PM	8		2.00	0	0	0	15	631.19	0	0.0		3
6/16/06	5:38:38 PM	9		2.00	0	0	0	6	633.06	0	0.0		3
6/16/06	5:41:19 PM	10		2.00	1	2	0	5	634.30	3	362.2		3
6/16/06	5:44:01 PM	11		2.00	1	1	0	5	626.77	2	513.6		3
6/16/06	5:46:45 PM	12		2.00	35	34	0	0	579.43	67	27.3		3
6/16/06	5:49:28 PM	13		2.00	2	1	1	9	586.35	3	321.1		3
6/16/06	5:52:12 PM	14		2.00	18	17	0	2	557.58	35	41.9		3
6/16/06	5:54:56 PM	15		2.00	11	10	0	5	609.47	20	62.4		3
6/16/06	5:57:40 PM	16		2.00	0	0	0	7	638.08	0	0.0		3
6/16/06	6:00:27 PM	17		2.00	5	5	0	3	636.90	9	115.3		3
6/16/06	6:03:10 PM	18		2.00	0	0	0	0	616.44	0	0.0		3
6/16/06	6:05:52 PM	19		2.00	4	4	0	4	579.78	7	139.5		3
6/16/06	6:08:35 PM	20		2.00	0	0	0	5	572.85	0	0.0		3

7

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F1711/353

09 405/14
MT-06-0584

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_167
 Batch Ended: 6/16/06 15:54
 Cal. Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0584 RICHARDSON (20) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flag	DPM	σ	flag
A1	1	0.00	2.20		0.38	1.85	
A2	2	0.00	2.04		2.68	2.33	
A3	3	0.00	2.28		0.30	1.78	
A4	4	0.00	2.13		1.78	2.09	
B1	5	0.00	1.89		0.25	1.68	
B2	6	0.00	1.85		0.00	1.12	
B3	7	0.00	2.22		1.59	2.30	
B4	8	0.00	1.95		0.00	1.20	
C1	9	0.00	2.11		2.36	2.52	
C2	10	0.00	1.95		1.63	1.99	
C3	11	0.00	2.16		2.97	2.53	
C4	12	0.00	2.01		2.71	2.27	
D1	13	0.00	2.08		2.78	2.50	
D2	14	0.00	2.21		3.89	2.67	
D3	15	1.68	2.10		0.10	1.76	
D4	16	0.00	2.04		0.00	1.18	
A1	17	0.00	2.20		0.38	1.85	
A2	18	1.79	2.02		0.20	1.65	
A3	19	0.00	2.31		2.81	2.52	
A4	20	0.00	2.11		0.58	1.71	

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T-Building Lower Statics and dose rates SYS02B

RSDS# MT-06-0584 RCT: RCT: N/A

Alpha	43-68 BKG:	0	EFF:	0.206	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.163	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02B0117S	5923		5925	1	1	6/16/06	12:38	12	120	46
ALPHA	SYS02B0118S	5923		5925	1	2	6/16/06	12:42	5	120	19
ALPHA	SYS02B0119S	5923		5925	1	3	6/16/06	12:45	5	120	19
ALPHA	SYS02B0120S	5923		5925	1	4	6/16/06	12:49	8	120	31
ALPHA	SYS02B0112S	5923		5925	1	5	6/16/06	13:00	9	120	35
ALPHA	SYS02B0113S	5923		5925	1	6	6/16/06	13:04	8	120	31
ALPHA	SYS02B0114S	5923		5925	1	7	6/16/06	13:08	7	120	27
ALPHA	SYS02B0115S	5923		5925	1	8	6/16/06	13:11	13	120	50
ALPHA	SYS02B0116S	5923		5925	1	9	6/16/06	13:33	13	120	50
ALPHA	SYS02B0111S	5923		5925	1	10	6/16/06	13:40	5	120	19
ALPHA	SYS02B0110S	5923		5925	1	11	6/16/06	13:45	3	120	12
ALPHA	SYS02B0108S	5923		5925	1	12	6/16/06	13:50	9	120	35
ALPHA	SYS02B0107S	5923		5925	1	13	6/16/06	13:53	9	120	35
ALPHA	SYS02B0106S	5923		5925	1	14	6/16/06	13:59	40	120	154
ALPHA	SYS02B0109S	5923		5925	1	15	6/16/06	14:05	16	120	62
ALPHA	SYS02B0105S	5923		5925	1	16	6/16/06	14:09	18	120	69
ALPHA	SYS02B0104S	5923		5925	1	17	6/16/06	14:12	6	120	23
ALPHA	SYS02B0103S	5923		5925	1	18	6/16/06	14:16	3	120	12
ALPHA	SYS02B0102S	5923		5925	1	19	6/16/06	14:20	5	120	19
ALPHA	SYS02B0101S	5923		5925	1	20	6/16/06	14:23	21	120	81
BETA	SYS02B0117S	5923		5925	2	1	6/16/06	12:39	134	60	1305
BETA	SYS02B0118S	5923		5925	2	2	6/16/06	12:43	165	60	1607
BETA	SYS02B0119S	5923		5925	2	3	6/16/06	12:47	162	60	1578
BETA	SYS02B0120S	5923		5925	2	4	6/16/06	12:50	161	60	1568
BETA	SYS02B0112S	5923		5925	2	5	6/16/06	13:02	157	60	1529
BETA	SYS02B0113S	5923		5925	2	6	6/16/06	13:05	168	60	1636
BETA	SYS02B0114S	5923		5925	2	7	6/16/06	13:09	161	60	1568
BETA	SYS02B0115S	5923		5925	2	8	6/16/06	13:12	128	60	1246
BETA	SYS02B0116S	5923		5925	2	9	6/16/06	13:34	174	60	1694
BETA	SYS02B0111S	5923		5925	2	10	6/16/06	13:41	165	60	1607
BETA	SYS02B0110S	5923		5925	2	11	6/16/06	13:46	163	60	1587
BETA	SYS02B0108S	5923		5925	2	12	6/16/06	13:51	114	60	1110
BETA	SYS02B0107S	5923		5925	2	13	6/16/06	13:55	115	60	1120
BETA	SYS02B0106S	5923		5925	2	14	6/16/06	14:00	282	60	2746
BETA	SYS02B0109S	5923		5925	2	15	6/16/06	14:06	222	60	2162
BETA	SYS02B0105S	5923		5925	2	16	6/16/06	14:10	170	60	1655
BETA	SYS02B0104S	5923		5925	2	17	6/16/06	14:14	157	60	1529
BETA	SYS02B0103S	5923		5925	2	18	6/16/06	14:17	207	60	2016
BETA	SYS02B0102S	5923		5925	2	19	6/16/06	14:21	226	60	2201
BETA	SYS02B0101S	5923		5925	2	20	6/16/06	14:24	318	60	3097

SYS-02B-01 West Headhouse
 floor and lower wall static measurement locations

Area: Area 8

Label	Type	Surface	LX	LY
SYS-02B-01-1	Systematic	Floor	1	4
SYS-02B-01-2	Systematic	Wall 4	5	3
SYS-02B-01-3	Systematic	Wall 3	4	3
SYS-02B-01-4	Systematic	Wall 2	5	3
SYS-02B-01-5	Systematic	Wall 1	4	3

Area: Area 9 Base of headhouse below mezzaine

Label	Type	Surface	LX	LY
SYS-02B-01-6	Systematic	Floor	4	2
SYS-02B-01-7	Systematic	Wall 4	4	3
SYS-02B-01-8	Systematic	Wall 3	5	3
SYS-02B-01-9	Systematic	Wall 2	6	3
SYS-02B-01-10	Systematic	Wall 1	7	3

Area: middle mezzaine

Label	Type	Surface	LX	LY
SYS-02B-01-11	Systematic	Floor	5	3
SYS-02B-01-12	Systematic	Wall 4	3	7
SYS-02B-01-13	Systematic	Wall 3	4	7
SYS-02B-01-14	Systematic	Wall 2	5	7
SYS-02B-01-15	Systematic	Wall 1	5	7

Area: Upper mezzaine

Label	Type	Surface	LX	LY
SYS-02B-01-16	Systematic	Floor	2	7
SYS-02B-01-17	Systematic	Wall 4	4	6
SYS-02B-01-18	Systematic	Wall 3	5	6
SYS-02B-01-19	Systematic	Wall 2	6	6
SYS-02B-01-20	Systematic	Wall 1	7	6

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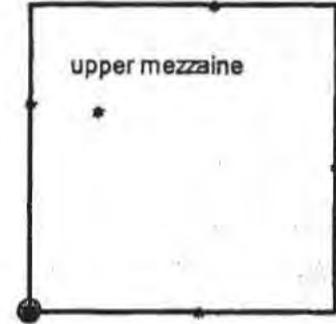
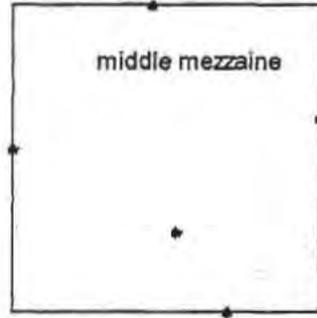
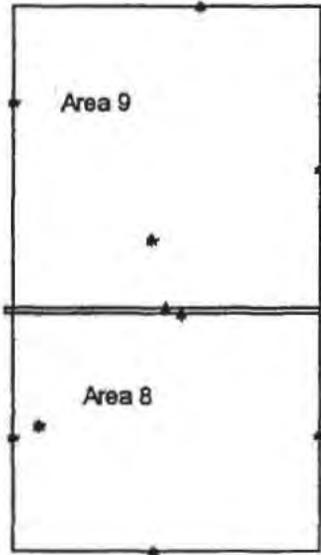
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 MT-06-0584

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MT-06-0584

SYS-02B West Headhouse

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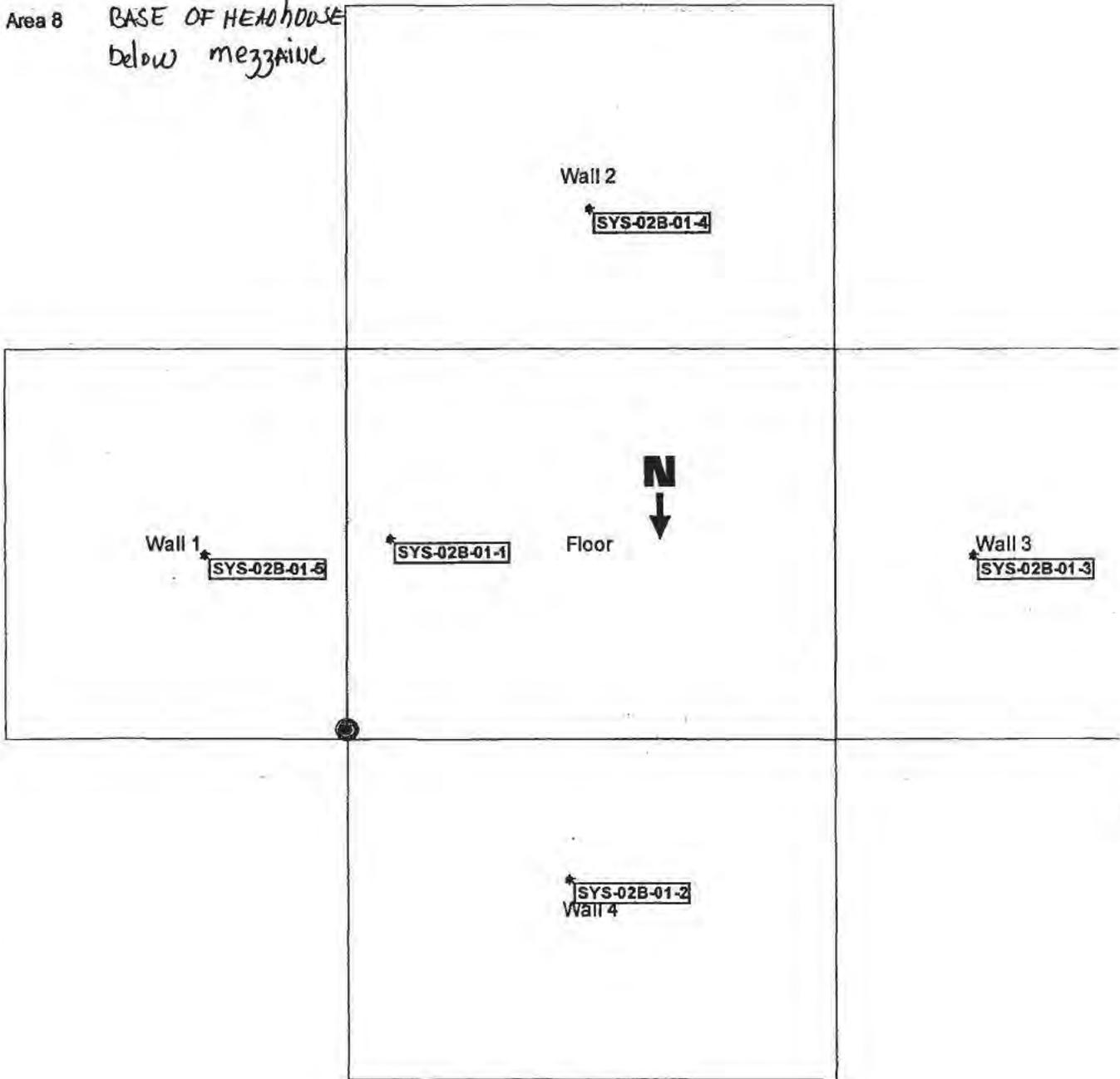


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SYS-02B-01 West Headhouse
lower static measurement locations

Area 8 *BASE OF HEADHOUSE*
below mezzanine

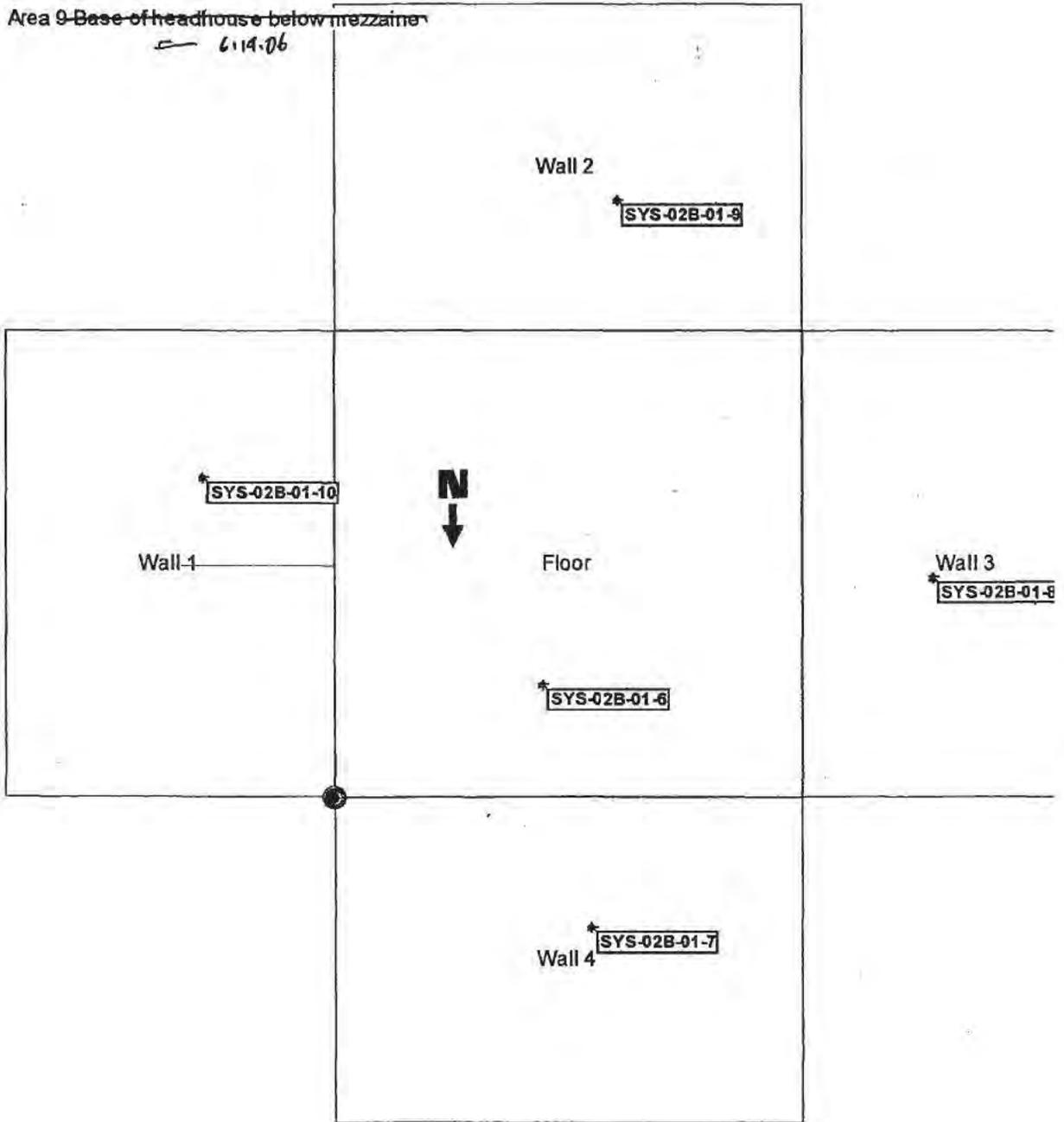


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MT-060584

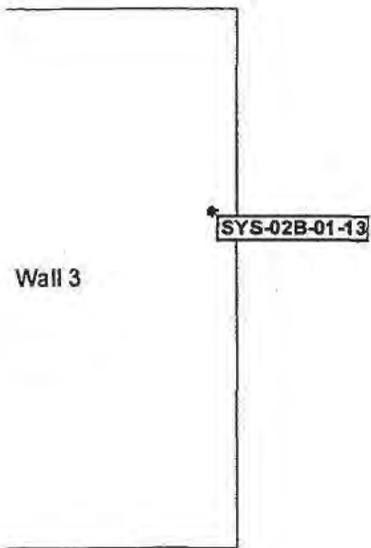
SYS-02B-01 West Headhouse
lower static measurement locations



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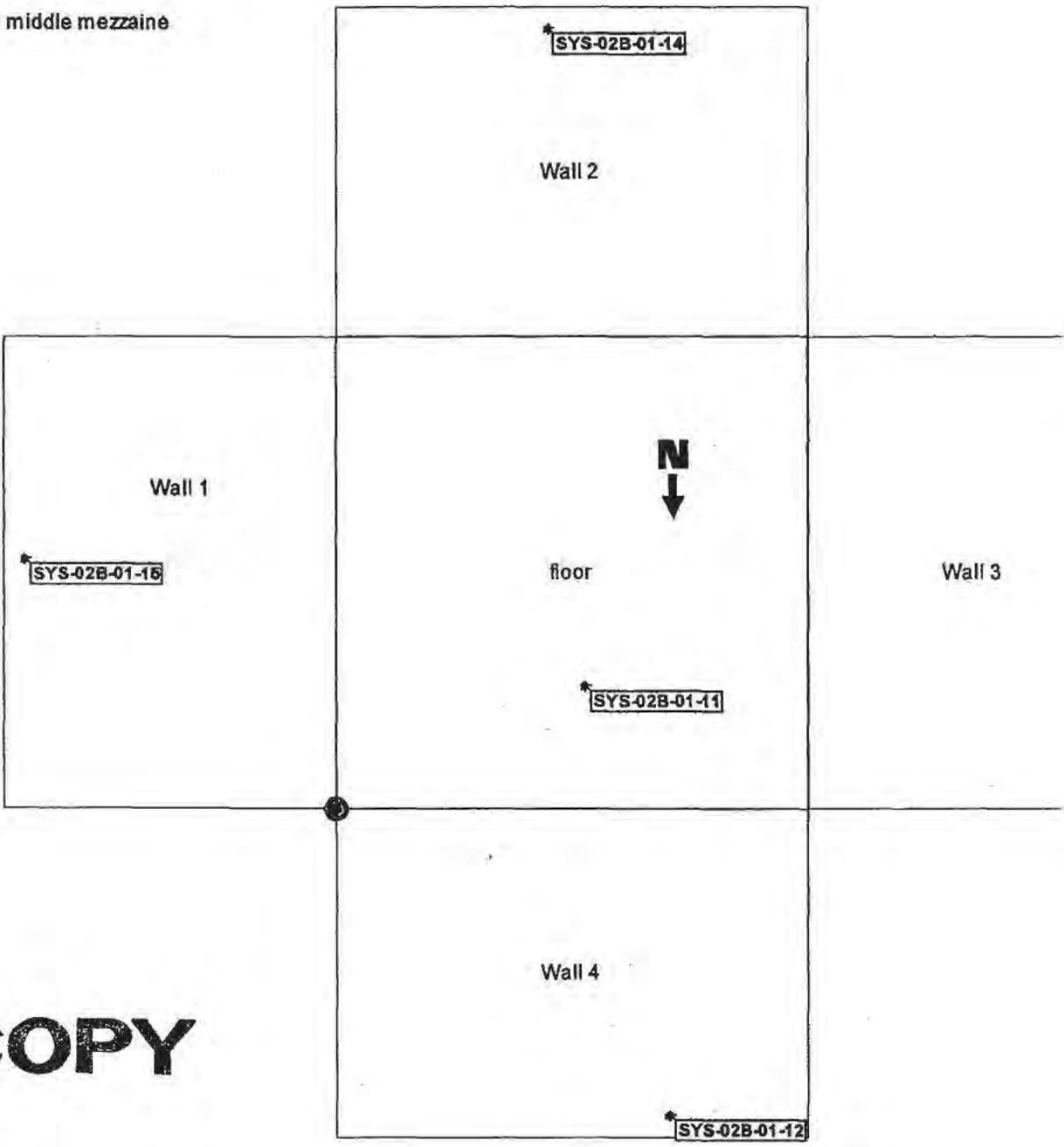


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Dq 120F.14
MTT-06.0584

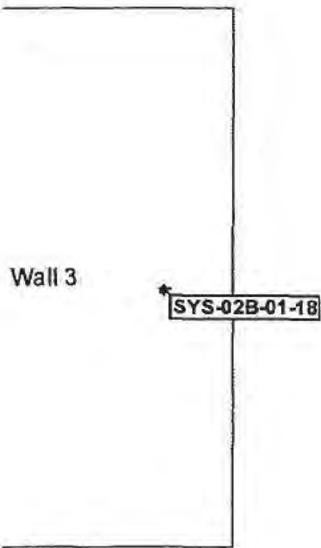
SYS-02B-01 West Headhouse
lower static measurement locations



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Pg 130F14
MT-06.0584

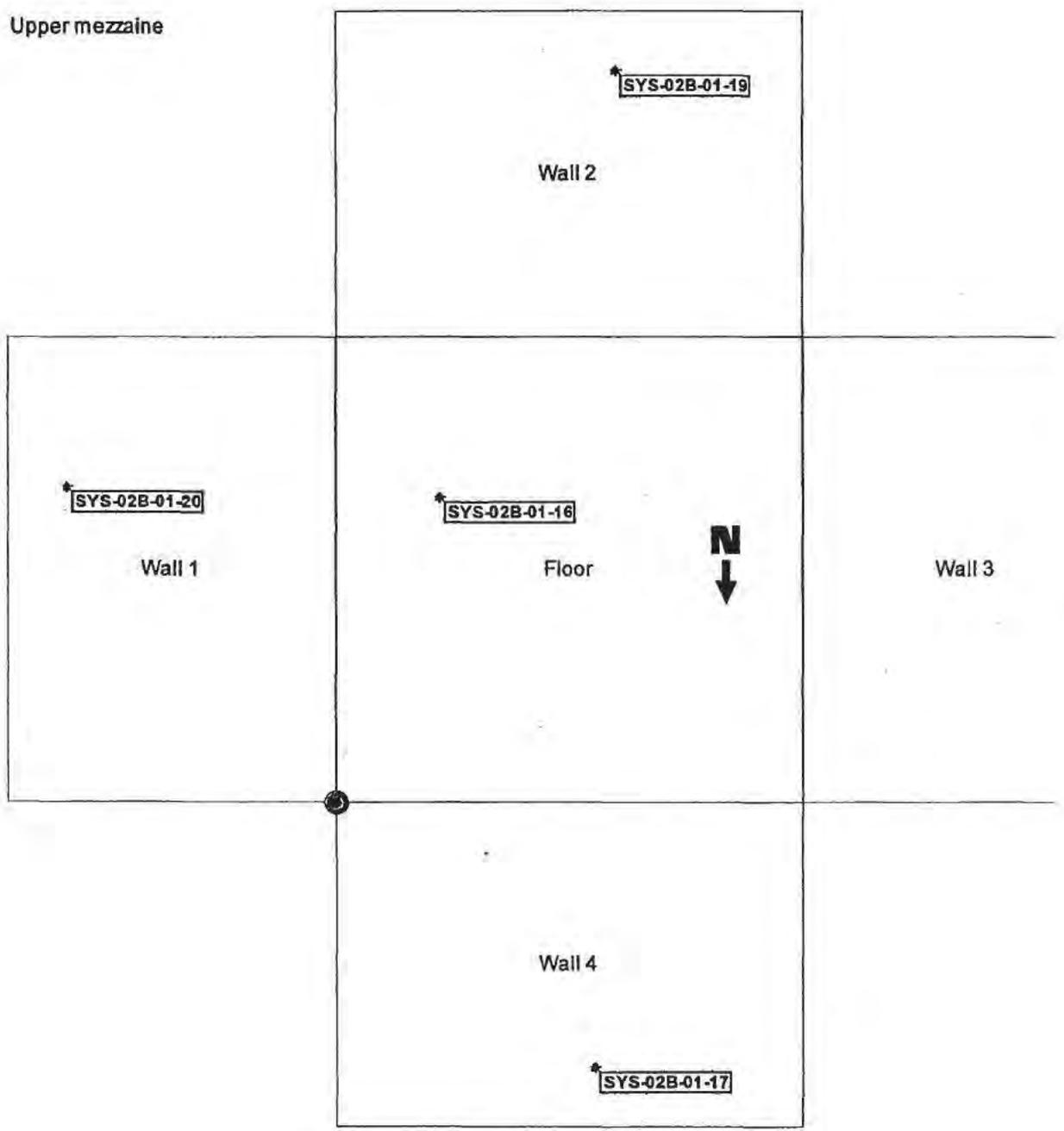


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SYS-02B-01 West Headhouse
lower static measurement locations



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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) <i>T-WEST HERDHOUSE</i>	SURVEY NO. <i>MT-06-0585</i>
PURPOSE: <i>MARSSIM upper static measurement</i>	RWP NO. <i>N/A</i>
	DATE: <i>6-17-06</i>
	TIME: <i>1000 HRS</i>

MAP / DRAWING

Sys 02B

SEE ATTACHED

SCAN OF ONE meter square around each ceiling location
 NO elevated readings detected for Alpha or Beta during scans

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LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

\triangle # = mrem/hr neutron # = swipe number
 # = air sample number #/a or / β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11-15-06
<i>N</i>		
<i>A</i>		

Completed by: (Signature) <i>Roy L Mowen</i>	Date: <i>6-17-06</i>
Completed by: (Print Name) <i>ROY L Mowen</i>	
Counted by: (Signature) <i>SEE ATTACHED</i>	HP#
Counted by: (Print Name) <i>sheets</i>	
Reviewed/Approved by: (Signature) <i>Ronald A. Deery</i>	Date: <i>6-19-06</i>
Reviewed/Approved by: (Print Name) <i>Ronald A. Deery</i>	<i>F180/353</i>

RD

Protocol# 2 - MARSSIM_Smear_2.lsa

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060617_1500.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0585.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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PA 30F12
KUH

Protocol# 2 - MARSSIM_Snear_2.lsa

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/17/06	3:01:21 PM	-1		10.00	9	8	11	9	616.74	0	21.5	B	2
6/17/06	3:12:09 PM	0		2.00	155	148	0	1	547.90	300	11.7		2
6/17/06	3:14:51 PM	1		2.00	16	16	0	2	577.67	31	44.7		2
6/17/06	3:17:36 PM	2		2.00	51	48	0	0	572.85	97	21.6		2
6/17/06	3:20:19 PM	3		2.00	1	2	0	0	626.19	3	339.8		2
6/17/06	3:23:02 PM	4		2.00	4	4	0	4	627.95	8	129.4		2
6/17/06	3:25:45 PM	5		2.00	1	1	0	0	634.92	2	500.1		2
6/17/06	3:28:28 PM	6		2.00	2	2	0	0	629.84	3	267.7		2
6/17/06	3:31:11 PM	7		2.00	3	4	0	0	633.41	5	180.7		2
6/17/06	3:33:55 PM	8		2.00	7	6	0	0	606.00	13	85.7		2
6/17/06	3:36:38 PM	9		2.00	9	9	0	3	591.94	16	70.1		2
6/17/06	3:39:21 PM	10		2.00	11	9	3	3	598.02	20	60.8		2
6/17/06	3:42:04 PM	11		2.00	0	0	0	0	612.74	0	0.0		2
6/17/06	3:44:48 PM	12		2.00	24	22	0	2	599.69	44	34.8		2
6/17/06	3:47:31 PM	13		2.00	12	10	0	2	611.57	22	56.3		2
6/17/06	3:50:14 PM	14		2.00	3	2	1	0	597.58	6	156.6		2
6/17/06	3:52:57 PM	15		2.00	12	11	0	0	618.82	21	57.5		2
6/17/06	3:55:40 PM	16		2.00	11	9	0	3	576.68	20	60.2		2
6/17/06	3:58:45 PM	17		2.00	7	7	0	0	640.79	12	85.3		2
6/17/06	4:01:28 PM	18		2.00	4	5	0	0	609.40	8	124.7		2
6/17/06	4:04:11 PM	19		2.00	2	2	0	0	621.60	4	215.0		2
6/17/06	4:06:54 PM	20		2.00	11	10	0	0	551.52	22	58.0		2
6/17/06	4:09:37 PM	21		2.00	0	0	0	0	623.34	0	0.0		2
6/17/06	4:12:20 PM	22		2.00	0	0	0	0	630.22	0	0.0		2
6/17/06	4:15:02 PM	23		2.00	0	0	0	0	622.83	0	0.0		2
6/17/06	4:17:45 PM	24		2.00	4	4	0	0	626.74	7	138.7		2

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MT-06-0585

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_169
 Batch Ended: 6/17/06 13:44
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0585 MOWEN (24) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flag	DPM	σ	flag
A1	1	1.95	2.18		0.00	1.31	
A2	2	0.00	2.01		0.36	1.65	
A3	3	0.00	2.26		0.00	1.27	
A4	4	0.00	2.16		4.19	2.70	
B1	5	0.00	1.89		0.25	1.68	
B2	6	0.00	1.89		1.59	1.93	
B3	7	0.00	2.18		0.00	1.33	
B4	8	0.00	1.97		0.66	1.69	
C1	9	1.73	2.11		2.21	2.52	
C2	10	0.00	1.93		0.00	1.16	
C3	11	0.00	2.14		0.45	1.79	
C4	12	0.00	2.00		1.58	1.97	
D1	13	0.00	2.07		1.53	2.17	
D2	14	0.00	2.15		0.00	1.20	
D3	15	1.68	2.10		0.10	1.76	
D4	16	0.00	2.05		0.40	1.66	
A1	17	0.00	2.20		0.38	1.85	
A2	18	0.00	2.01		0.36	1.65	
A3	19	0.00	2.28		0.30	1.78	
A4	20	1.90	2.10		0.00	1.21	
B1	21	0.00	1.87		0.00	1.20	
B2	22	0.00	1.91		2.71	2.23	
B3	23	0.00	2.18		0.00	1.34	
B4	24	1.68	1.95		0.00	1.20	

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T-Building Upper statics SYS02B

RSDS# MT-06-0585

RCT: [redacted]

RCT: N/A

Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02B0224S	5920		5929	1	1	6/16/06	13:17	8	120	30
ALPHA	SYS02B0223S	5920		5929	1	2	6/16/06	13:22	5	120	19
ALPHA	SYS02B0222S	5920		5929	1	3	6/16/06	13:40	5	120	19
ALPHA	SYS02B0221S	5920		5929	1	4	6/16/06	13:44	12	120	45
ALPHA	SYS02B0220S	5920		5929	1	5	6/16/06	13:49	7	120	26
ALPHA	SYS02B0219S	5920		5929	1	6	6/16/06	13:54	6	120	23
ALPHA	SYS02B0218S	5920		5929	1	7	6/16/06	14:04	7	120	26
ALPHA	SYS02B0217S	5920		5929	1	8	6/16/06	14:09	8	120	30
ALPHA	SYS02B0216S	5920		5929	1	9	6/16/06	14:23	10	120	38
ALPHA	SYS02B0215S	5920		5929	1	10	6/16/06	14:26	12	120	45
ALPHA	SYS02B0214S	5920		5929	1	11	6/16/06	14:30	8	120	30
ALPHA	SYS02B0213S	5920		5929	1	12	6/16/06	14:34	7	120	26
ALPHA	SYS02B0212S	5920		5929	1	13	6/16/06	14:37	13	120	49
ALPHA	SYS02B0201S	5920		5929	1	14	6/17/06	7:53	9	120	34
ALPHA	SYS02B0202S	5920		5929	1	15	6/17/06	7:58	16	120	60
ALPHA	SYS02B0203S	5920		5929	1	16	6/17/06	8:03	10	120	38
ALPHA	SYS02B0204S	5920		5929	1	17	6/17/06	8:08	16	120	60
ALPHA	SYS02B0205S	5920		5929	1	18	6/17/06	8:12	4	120	15
ALPHA	SYS02B0206S	5920		5929	1	19	6/17/06	8:17	12	120	45
ALPHA	SYS02B0207S	5920		5929	1	20	6/17/06	8:22	22	120	83
ALPHA	SYS02B0208S	5920		5929	1	21	6/17/06	8:27	19	120	72
ALPHA	SYS02B0209S	5920		5929	1	22	6/17/06	8:34	17	120	64
ALPHA	SYS02B0210S	5920		5929	1	23	6/17/06	8:38	13	120	49
ALPHA	SYS02B0211S	5920		5929	1	24	6/17/06	8:42	13	120	49
BETA	SYS02B0224S	5920		5929	2	1	6/16/06	13:18	130	60	1290
BETA	SYS02B0223S	5920		5929	2	2	6/16/06	13:23	119	60	1181
BETA	SYS02B0222S	5920		5929	2	3	6/16/06	13:41	108	60	1071
BETA	SYS02B0221S	5920		5929	2	4	6/16/06	13:45	105	60	1042
BETA	SYS02B0220S	5920		5929	2	5	6/16/06	13:50	146	60	1448
BETA	SYS02B0219S	5920		5929	2	6	6/16/06	13:55	142	60	1409
BETA	SYS02B0218S	5920		5929	2	7	6/16/06	14:05	171	60	1696
BETA	SYS02B0217S	5920		5929	2	8	6/16/06	14:10	137	60	1359
BETA	SYS02B0216S	5920		5929	2	9	6/16/06	14:24	107	60	1062
BETA	SYS02B0215S	5920		5929	2	10	6/16/06	14:27	154	60	1528
BETA	SYS02B0214S	5920		5929	2	11	6/16/06	14:31	205	60	2034
BETA	SYS02B0213S	5920		5929	2	12	6/16/06	14:35	185	60	1835
BETA	SYS02B0212S	5920		5929	2	13	6/16/06	14:38	173	60	1716
BETA	SYS02B0201S	5920		5929	2	14	6/17/06	7:54	123	60	1220
BETA	SYS02B0202S	5920		5929	2	15	6/17/06	8:00	122	60	1210
BETA	SYS02B0203S	5920		5929	2	16	6/17/06	8:04	145	60	1438
BETA	SYS02B0204S	5920		5929	2	17	6/17/06	8:09	129	60	1280
BETA	SYS02B0205S	5920		5929	2	18	6/17/06	8:13	106	60	1052

F157/353

PA 8/15/12
05-0583

SYS-02B-02 West Headhouse
ceiling and upper wall static measurement locations
scan 1m2 area around locations on ceiling

Area: Area 8

Label	Type	Surface	LX	LY
SYS-02B-02-1	Systematic	ceiling	3	1
SYS-02B-02-2	Systematic	ceiling	6	7
SYS-02B-02-3	Systematic	Wall 4	4	1
SYS-02B-02-4	Systematic	Wall 3	4	1
SYS-02B-02-5	Systematic	Wall 2	7	1
SYS-02B-02-6	Systematic	Wall 1	7	1

Area: Area 9 Base of headhouse below mezzaine

Label	Type	Surface	LX	LY
SYS-02B-02-7	Systematic	Wall 4	5	3
SYS-02B-02-8	Systematic	Wall 3	7	3
SYS-02B-02-9	Systematic	Wall 2	10	3
SYS-02B-02-10	Systematic	Wall 2	2	3
SYS-02B-02-11	Systematic	Wall 1	5	3

Area: middle mezzaine

Label	Type	Surface	LX	LY
SYS-02B-02-12	Systematic	Wall 4	3	2
SYS-02B-02-13	Systematic	Wall 3	6	2
SYS-02B-02-14	Systematic	Wall 2	8	2
SYS-02B-02-15	Systematic	Wall 2	1	2
SYS-02B-02-16	Systematic	Wall 1	3	2

Area: Upper mezzaine

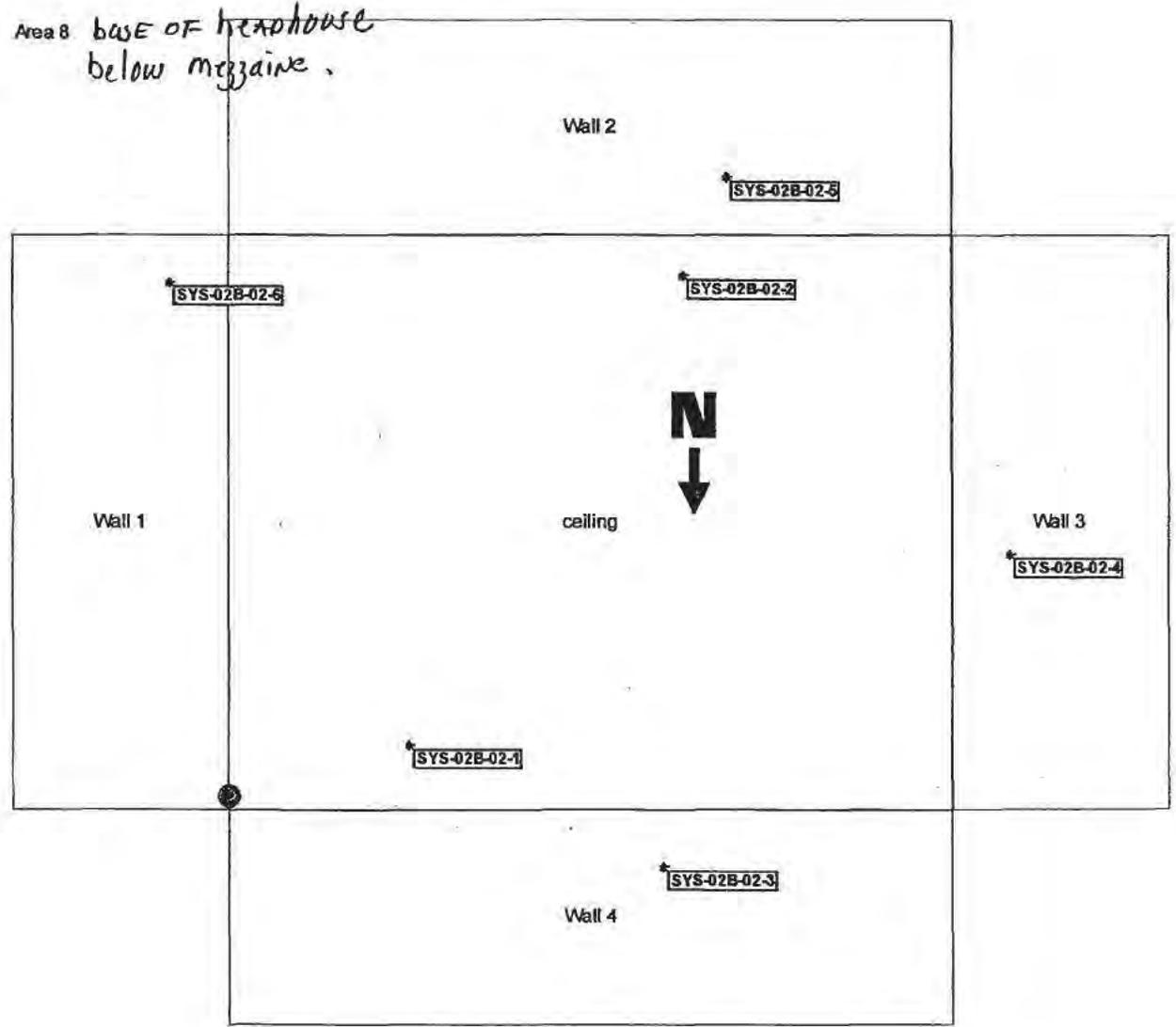
Label	Type	Surface	LX	LY
SYS-02B-02-17	Systematic	ceiling-f	0	6
SYS-02B-02-18	Systematic	ceiling-f	8	6
SYS-02B-02-19	Systematic	Wall 4	10	3
SYS-02B-02-20	Systematic	Wall 4	2	3
SYS-02B-02-21	Systematic	Wall 3	4	3
SYS-02B-02-22	Systematic	Wall 2	7	3
SYS-02B-02-23	Systematic	Wall 1	9	3
SYS-02B-02-24	Systematic	Wall 1	2	3

COPY

F189/353

Pg 9 of 12
MT 06.0585

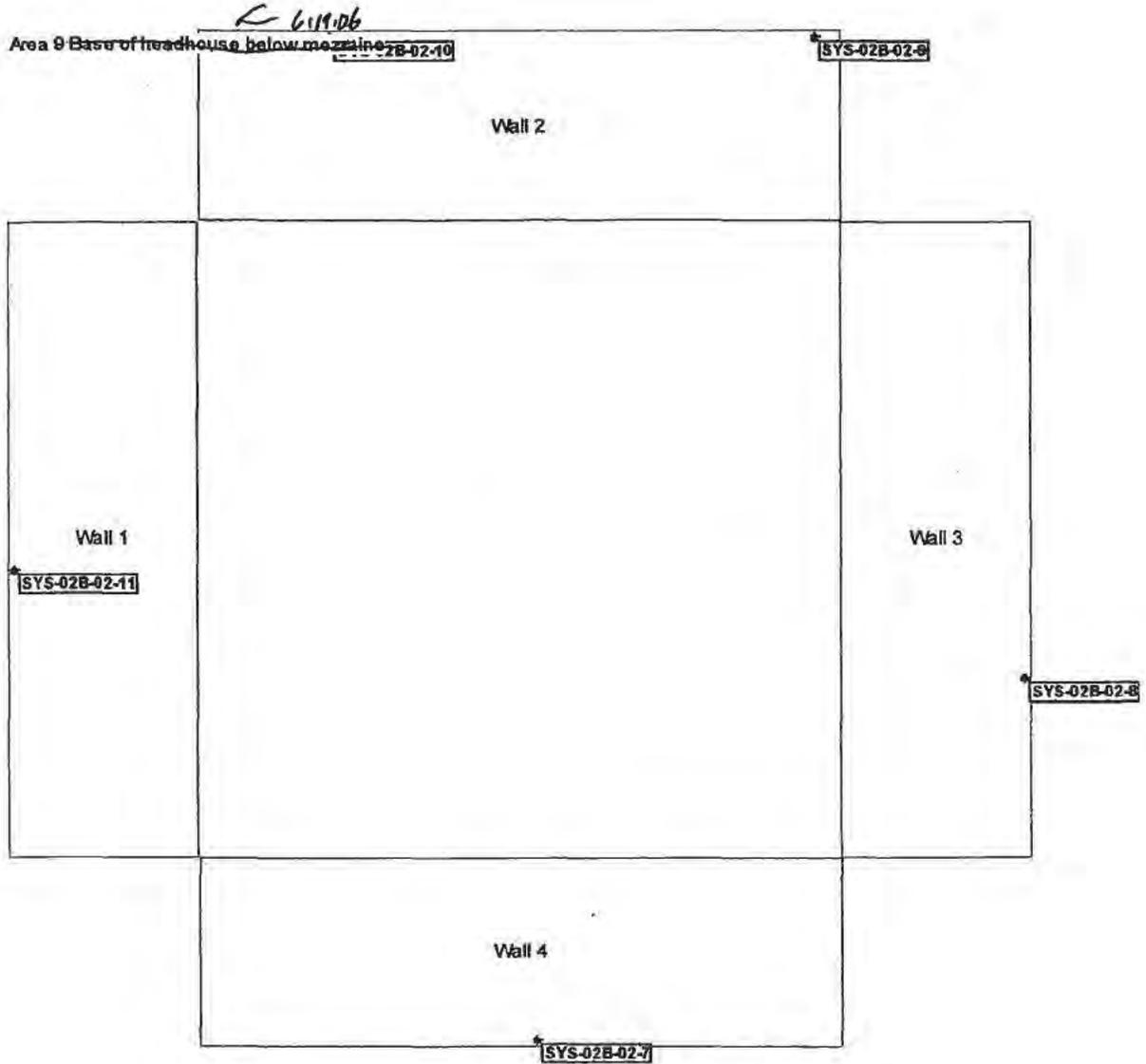
SYS-02B-02 West Headhouse
ceiling and upper wall static measurement locations
scan 1m2 area around locations on ceiling



COPY

F190/353

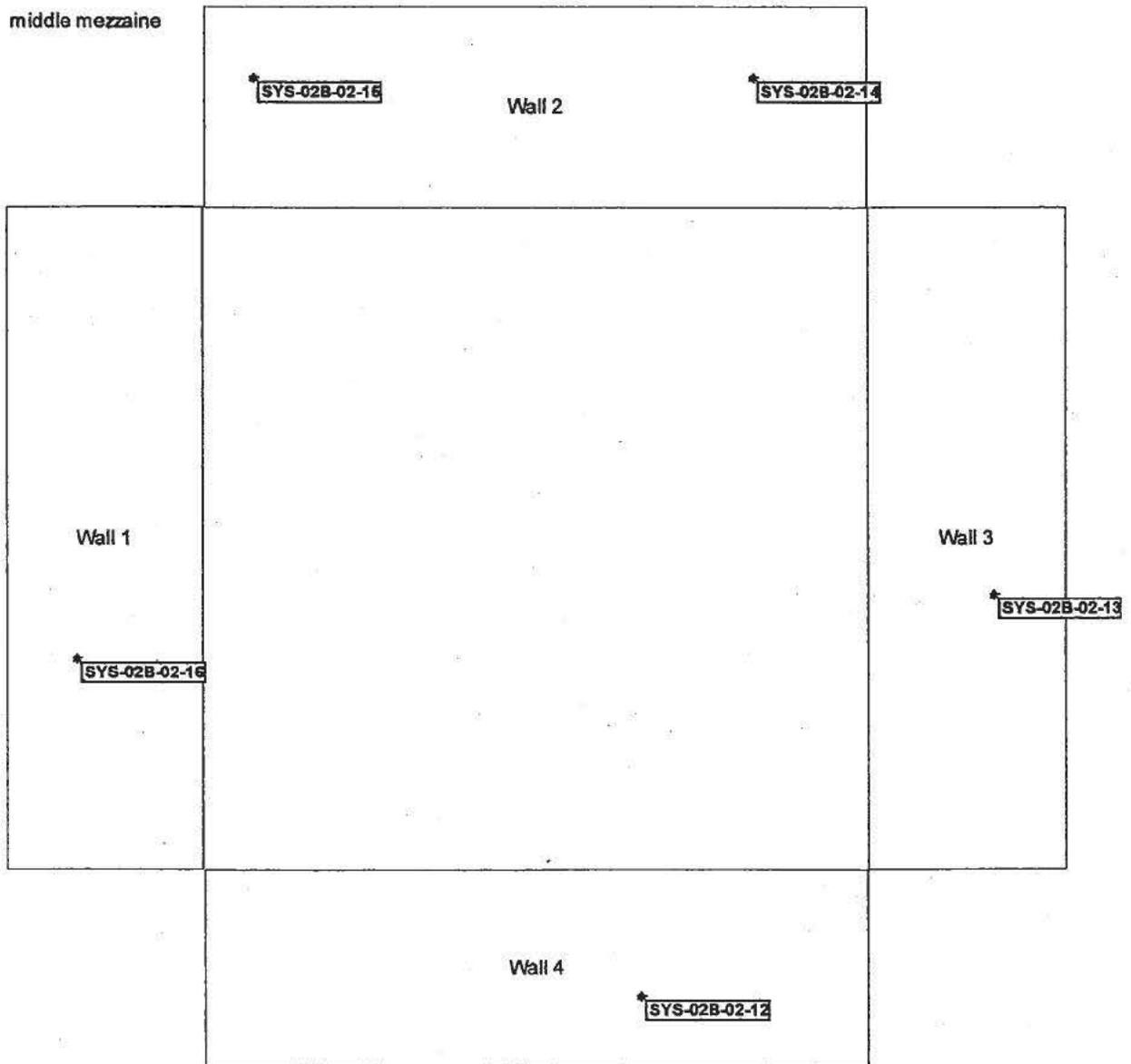
SYS-02B-02 West Headhouse
ceiling and upper wall static measurement locations
scan 1m2 area around locations on ceiling



COPY

Pg 11 of 12
MT-06-0585

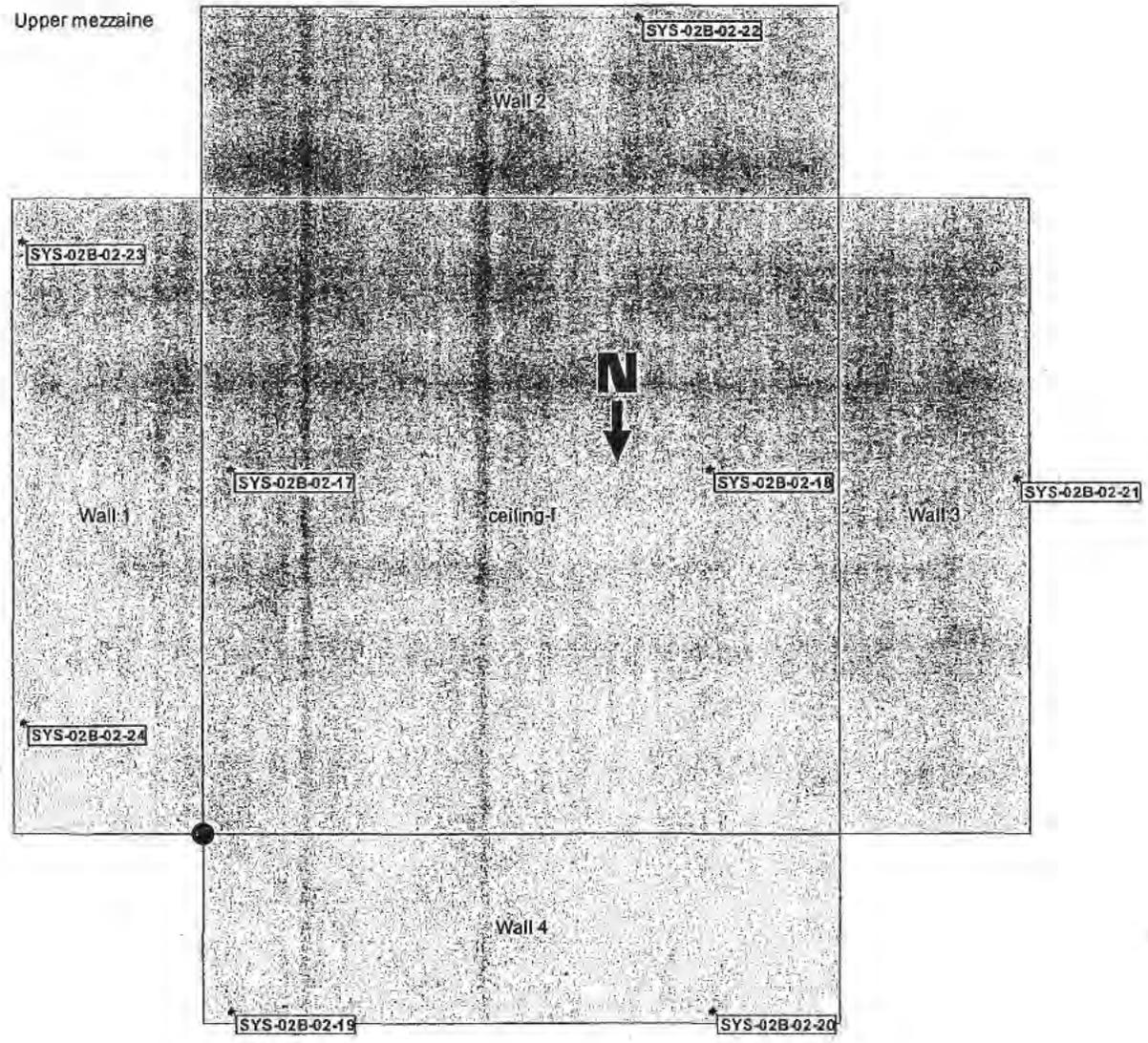
SYS-02B-02 West Headhouse
ceiling and upper wall static measurement locations
scan 1m2 area around locations on ceiling



COPY

Fig 2/353

SYS-02B-02 West Headhouse
ceiling and upper wall static measurement locations
scan 1m2 area around locations on ceiling



COPY

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T-BLOB HEADHOUSE	SURVEY NO.	MT 06 0590
PURPOSE:	Judgements Upper+Lower	RWP NO.	NA
	SYS02B	DATE:	6/17/06
		TIME:	1000

MAP / DRAWING

SEE ATTACHED.

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

\triangle # = mrem/hr neutron # = swipe number
 # = air sample number #/a or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5923 / 5925	5 / 21 / 07
	NA	
	A	

Completed by: (Signature)	<i>[Signature]</i>	Date:	6-17-06
Completed by: (Print Name)	RICHARDSON		
Counted by: (Signature)	SEE ATTACHED	HP#	
Counted by: (Print Name)	SHETS		
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald R. P. G.		FIG 4/353

(P00)

Protocol# 3 - MARSSIM_Smear_3.lsa

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: C:\Packard\TriCarb\Results\~MARSSIMS
Raw Results Path: C:\Packard\TriCarb\Results\5801\MARSSIM Smear 3\20060617_1620.results
Comma-Delimited File Name: C:\Packard\TriCarb\Results\~MARSSIMS\MT-06-0590.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_3.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

COPY

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

From 196/353

pg 30F11

Rett

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/17/06	4:21:02 PM	-1		10.00	10	10	11	4	609.45	0	19.7	B	3
6/17/06	4:31:51 PM	0		2.00	40	35	3	5	534.84	78	25.6		3
6/17/06	4:34:34 PM	1		2.00	0	0	0	5	618.11	0	0.0		3
6/17/06	4:37:18 PM	2		2.00	0	0	0	0	646.01	0	0.0		3
6/17/06	4:40:00 PM	3		2.00	1	0	0	4	616.26	2	624.8		3
6/17/06	4:42:42 PM	4		2.00	1	2	2	0	637.14	2	434.6		3
6/17/06	4:45:25 PM	5		2.00	0	1	3	0	633.61	0	2526.6		3
6/17/06	4:48:07 PM	6		2.00	4	3	0	0	609.23	7	153.1		3
6/17/06	4:50:50 PM	7		2.00	0	0	0	0	621.29	0	0.0		3
6/17/06	4:53:32 PM	8		2.00	0	0	0	5	613.71	0	0.0		3
6/17/06	4:56:15 PM	9		2.00	31	27	0	1	553.64	59	30.2		3
6/17/06	4:58:57 PM	10		2.00	0	0	0	5	629.96	0	0.0		3
6/17/06	5:01:39 PM	11		2.00	2	2	0	4	612.66	3	312.2		3
6/17/06	5:04:22 PM	12		2.00	0	0	0	0	632.74	0	4958.8		3
6/17/06	5:07:04 PM	13		2.00	0	0	2	0	634.21	0	0.0		3
6/17/06	5:09:46 PM	14		2.00	12	10	0	0	541.58	24	57.5		3
6/17/06	5:12:29 PM	15		2.00	19	16	0	2	550.31	36	42.2		3
6/17/06	5:15:13 PM	16		2.00	0	0	0	7	547.07	0	0.0		3
6/17/06	5:17:59 PM	17		2.00	10	7	23	2	552.33	20	65.9		3
6/17/06	5:20:41 PM	18		2.00	0	0	0	0	629.99	0	2526.6		3
6/17/06	5:23:23 PM	19		2.00	0	0	0	0	625.10	0	0.0		3
6/17/06	5:26:07 PM	20		2.00	0	0	1	5	597.21	0	2526.6		3

COPY

F1971/353

PA 40F11
MT-06-0590

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_168
 Batch Ended: 6/17/06 13:25
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0590 RICHARDSON (20) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.20		0.38	1.85	
A2	2	0.00	2.14		9.65	3.70	
A3	3	2.01	2.28		0.12	1.78	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.91		1.44	2.06	
B2	6	0.00	1.87		0.48	1.58	
B3	7	0.00	2.18		0.00	1.33	
B4	8	0.00	1.95		0.00	1.20	
C1	9	0.00	2.08		0.00	1.78	
C2	10	0.00	1.93		0.00	1.16	
C3	11	2.02	2.13		0.00	1.27	
C4	12	0.00	1.99		0.45	1.61	
D1	13	0.00	2.05		0.00	1.26	
D2	14	1.93	2.17		0.17	1.69	
D3	15	0.00	2.09		0.00	1.25	
D4	16	0.00	2.04		0.00	1.18	
A1	17	0.00	2.20		0.38	1.85	
A2	18	0.00	2.01		0.36	1.65	
A3	19	0.00	2.26		0.00	1.27	
A4	20	0.00	2.11		0.58	1.71	

de

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6.19.06
 Page 1 of 1
f

PA 501-11
 MT-06-0590
AF

T-Building Judgements upper and lower SYS02B

RSDS# MT-06-0590

RCT:

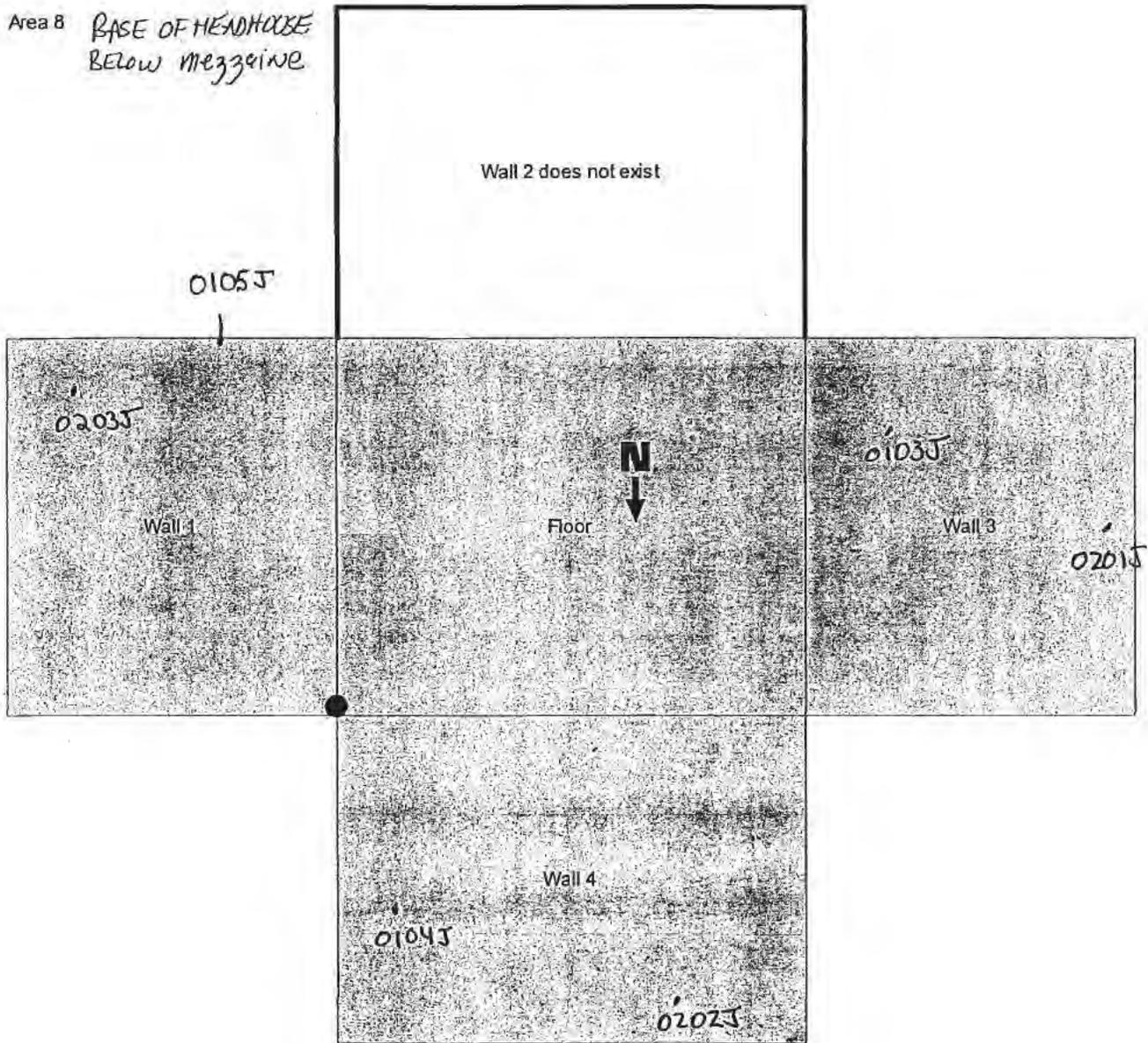
RCT: N/A

Alpha	43-68 BKG:	0	EFF:	0.206	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.163	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02B0101J	5923		5925	1	1	6/17/06	7:52	7	120	27
ALPHA	SYS02B0102J	5923		5925	1	2	6/17/06	7:56	8	120	31
ALPHA	SYS02B0103J	5923		5925	1	3	6/17/06	8:00	11	120	42
ALPHA	SYS02B0104J	5923		5925	1	4	6/17/06	8:04	13	120	50
ALPHA	SYS02B0105J	5923		5925	1	5	6/17/06	8:07	7	120	27
ALPHA	SYS02B0201J	5923		5925	1	6	6/17/06	8:11	16	120	62
ALPHA	SYS02B0202J	5923		5925	1	7	6/17/06	8:14	9	120	35
ALPHA	SYS02B0203J	5923		5925	1	8	6/17/06	8:18	12	120	46
ALPHA	SYS02B0204J	5923		5925	1	9	6/17/06	8:22	23	120	89
ALPHA	SYS02B0205J	5923		5925	1	10	6/17/06	8:27	11	120	42
ALPHA	SYS02B0106J	5923		5925	1	11	6/17/06	8:42	15	120	58
ALPHA	SYS02B0107J	5923		5925	1	12	6/17/06	8:46	14	120	54
ALPHA	SYS02B0108J	5923		5925	1	13	6/17/06	8:51	14	120	54
ALPHA	SYS02B0206J	5923		5925	1	14	6/17/06	8:55	10	120	39
ALPHA	SYS02B0207J	5923		5925	1	15	6/17/06	8:59	8	120	31
ALPHA	SYS02B0110J	5923		5925	1	16	6/17/06	9:07	12	120	46
ALPHA	SYS02B0109J	5923		5925	1	17	6/17/06	9:12	23	120	89
ALPHA	SYS02B0208J	5923		5925	1	18	6/17/06	9:18	4	120	15
ALPHA	SYS02B0209J	5923		5925	1	19	6/17/06	9:21	5	120	19
ALPHA	SYS02B0210J	5923		5925	1	20	6/17/06	9:25	11	120	42
BETA	SYS02B0101J	5923		5925	2	1	6/17/06	7:54	120	60	1169
BETA	SYS02B0102J	5923		5925	2	2	6/17/06	7:57	127	60	1237
BETA	SYS02B0103J	5923		5925	2	3	6/17/06	8:01	123	60	1198
BETA	SYS02B0104J	5923		5925	2	4	6/17/06	8:05	140	60	1363
BETA	SYS02B0105J	5923		5925	2	5	6/17/06	8:08	129	60	1256
BETA	SYS02B0201J	5923		5925	2	6	6/17/06	8:12	132	60	1285
BETA	SYS02B0202J	5923		5925	2	7	6/17/06	8:16	121	60	1178
BETA	SYS02B0203J	5923		5925	2	8	6/17/06	8:19	139	60	1354
BETA	SYS02B0204J	5923		5925	2	9	6/17/06	8:23	227	60	2211
BETA	SYS02B0205J	5923		5925	2	10	6/17/06	8:28	162	60	1578
BETA	SYS02B0106J	5923		5925	2	11	6/17/06	8:43	164	60	1597
BETA	SYS02B0107J	5923		5925	2	12	6/17/06	8:47	129	60	1256
BETA	SYS02B0108J	5923		5925	2	13	6/17/06	8:52	151	60	1470
BETA	SYS02B0206J	5923		5925	2	14	6/17/06	8:56	149	60	1451
BETA	SYS02B0207J	5923		5925	2	15	6/17/06	9:00	136	60	1324
BETA	SYS02B0110J	5923		5925	2	16	6/17/06	9:08	156	60	1519
BETA	SYS02B0109J	5923		5925	2	17	6/17/06	9:13	134	60	1305
BETA	SYS02B0208J	5923		5925	2	18	6/17/06	9:19	155	60	1509
BETA	SYS02B0209J	5923		5925	2	19	6/17/06	9:23	145	60	1412
BETA	SYS02B0210J	5923		5925	2	20	6/17/06	9:26	155	60	1509
							N				

Pg 80F11
MT-06-05-90

SYS-02B
Bias measurement locations

Area 8 BASE OF HEADHOUSE
BELOW MEZZERINE

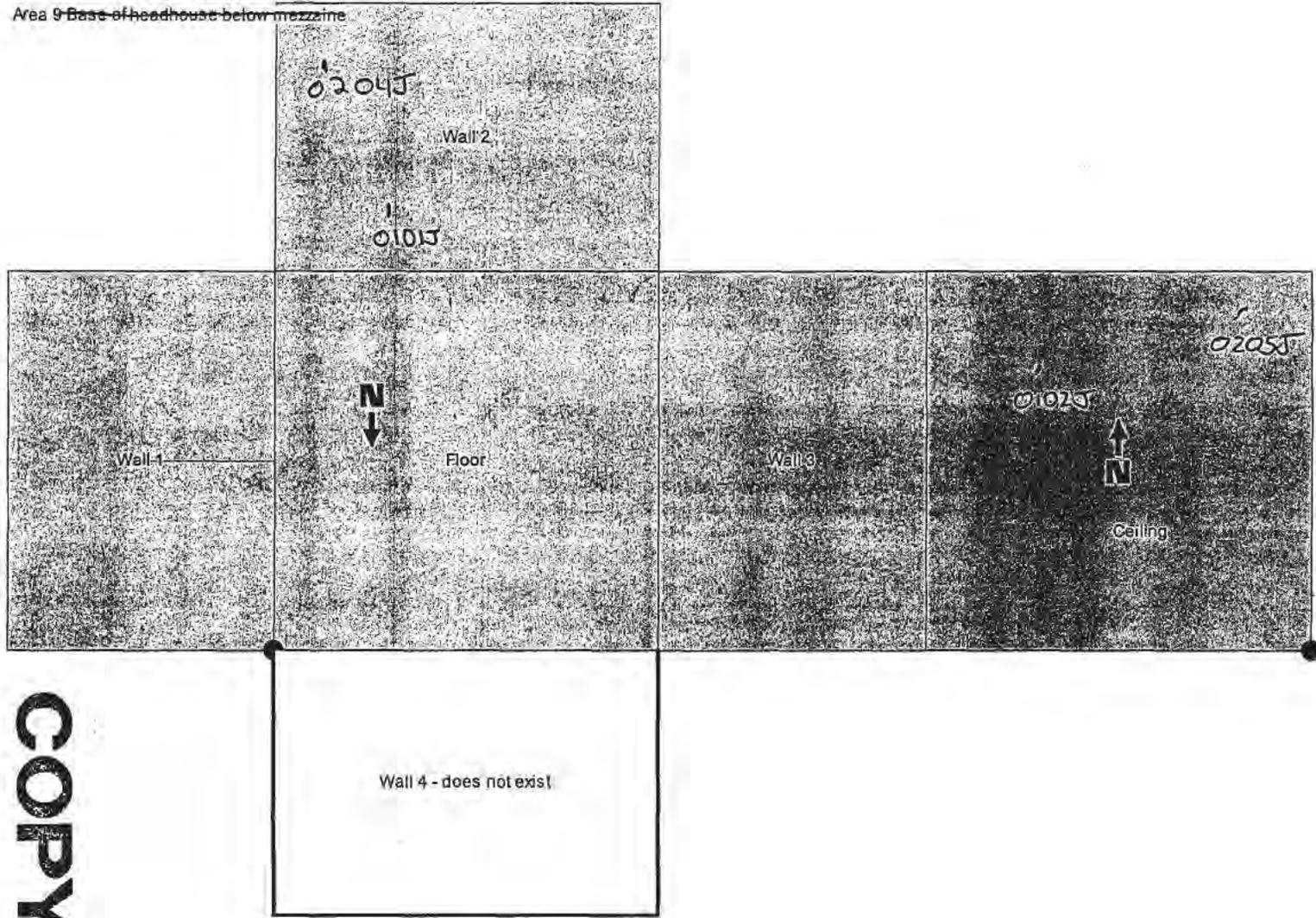


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F201/353

SYS-02B
Bias measurement locations

a 6901
Area 9 Base of headhouse below mezzanine



COPY

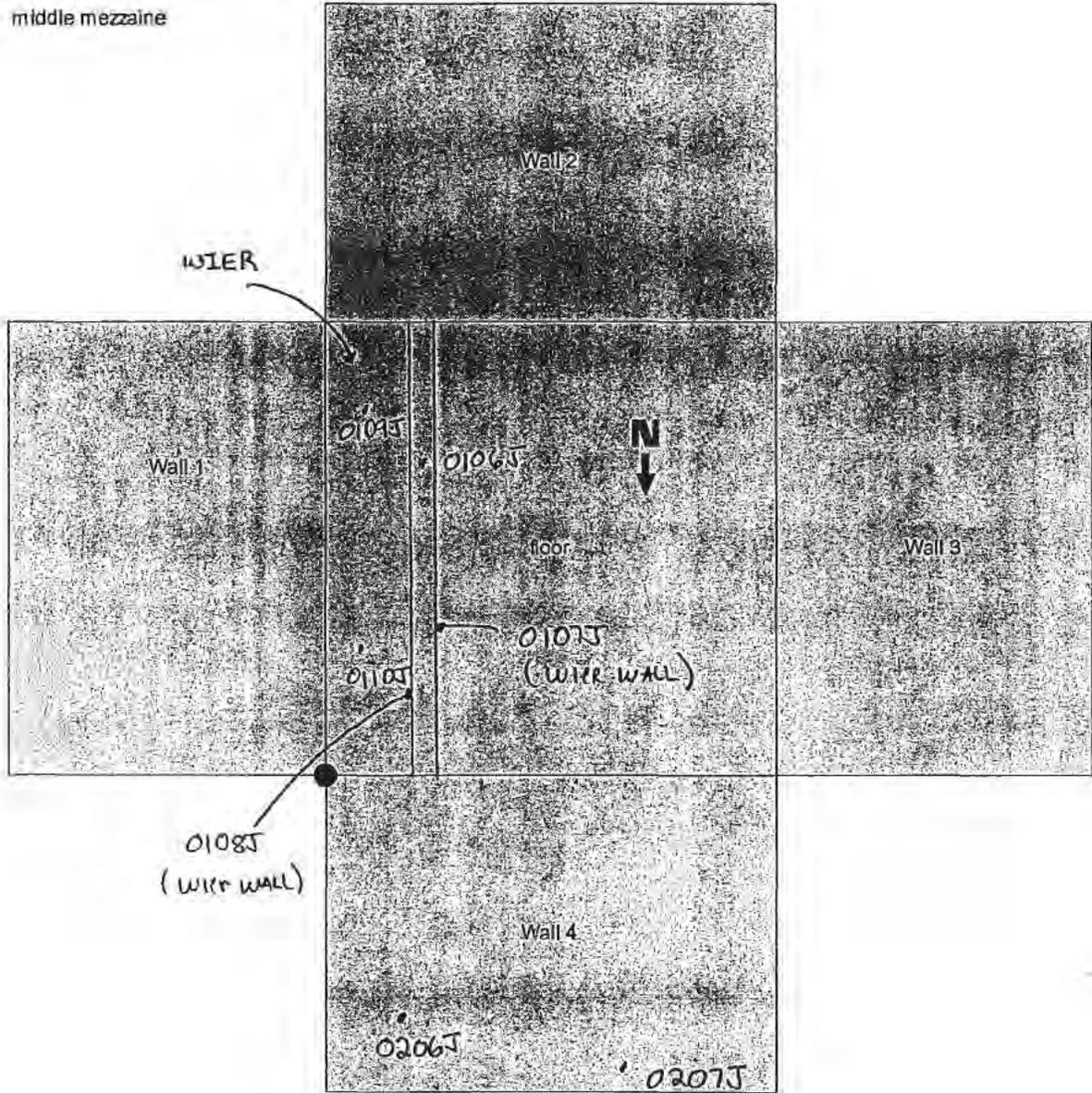
F502/353

*Pq 90F11
MT-06-0590*

pg 10 of 11
MT '06 '05 90

SYS-02B
Bias measurement locations

middle mezzaine

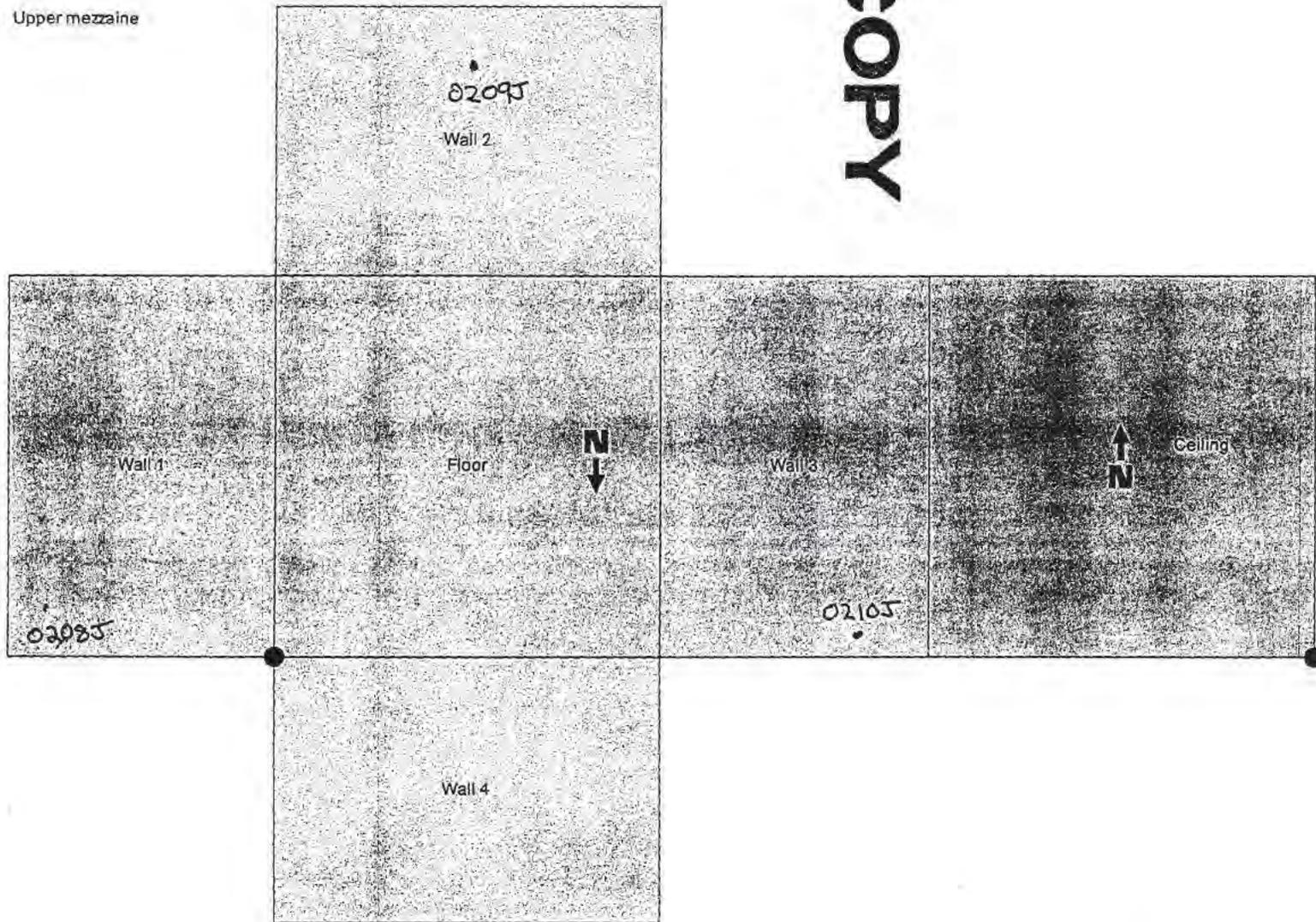


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F203/353

SYS-02B
Bias measurement locations

Upper mezzaine



COPY

Floor/353

pg 11 of 21
MT-06-05
0591

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 8

LOCATION: (BLDG./AREA/ROOM)	T-B406: Headhouse area 19	SURVEY NO.	MT-06-0591
PURPOSE:	DRAINS, VENTS AND UTS	RWP NO.	N/A
	SYS02B	DATE:	6/17/06
		TIME:	1200

MAP / DRAWING

SEE ATTACHED.

NO VENTS OR UTILITIES IN
THIS SURVEY UNIT.

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
 # = air sample number #/a = or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5921/5926	5/21/07
	N/A	

Completed by: (Signature)	[Signature]	Date:	6/19/06
Completed by: (Print Name)	S. Richardson		
Counted by: (Signature)	SEE ATTACHED	HP#	
Counted by: (Print Name)	SHEETS		
Reviewed/Approved by: (Signature)	[Signature]	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald R. Paily		F205/353

MP

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060617_1443.results
Comma-Delimited File Name: D:\MARSSIM LSC\MT-06-0591.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

COPY

7/20/06/353

pg 307 8

PH

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/17/06	2:44:30 PM	-1		10.00	10	9	12	7	605.25	0	20.4	B	1
6/17/06	2:55:20 PM	0		2.00	249	240	0	0	533.84	488	9.2		1
6/17/06	2:58:02 PM	1		2.00	1	1	0	5	599.52	1	810.5		1

COPY

7208/353

Pg 4 of 8
MT-06.0591

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_170
Batch Ended: 6/17/06 13:53
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0591 RICHARDSON (1) AG ✓

Detector ID	Sample ID
A1	1

Alpha Activity		
DPM	σ	flags
0.00	2.23	

Beta Activity		
DPM	σ	flags
2.98	2.62	

COPY

F
209/353

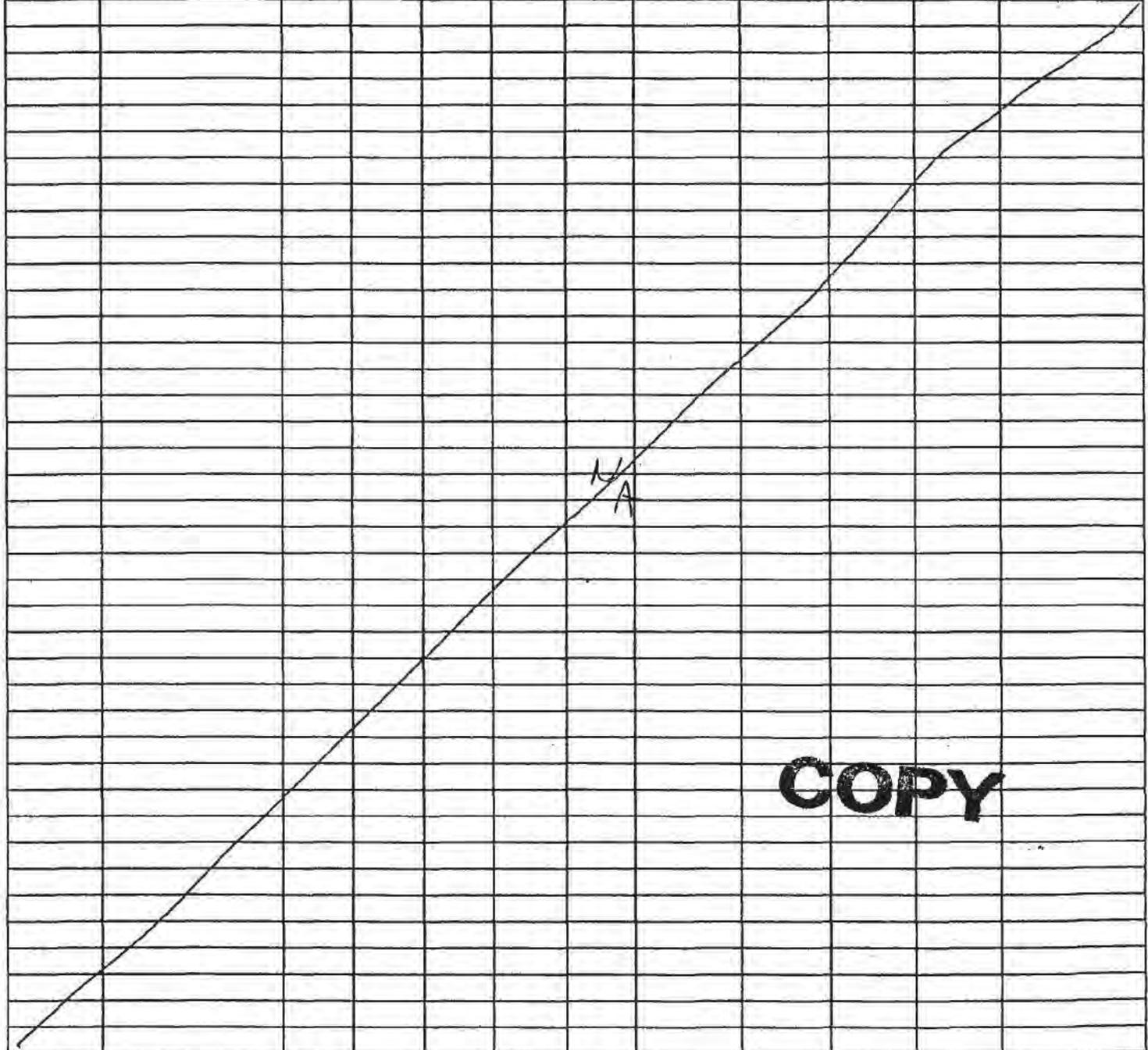
pg 5 of 8
All

T-Building Drains, Vents, & Utilities SYS02B

RSDS# MT-06-0591 RCT: RCT: N/A

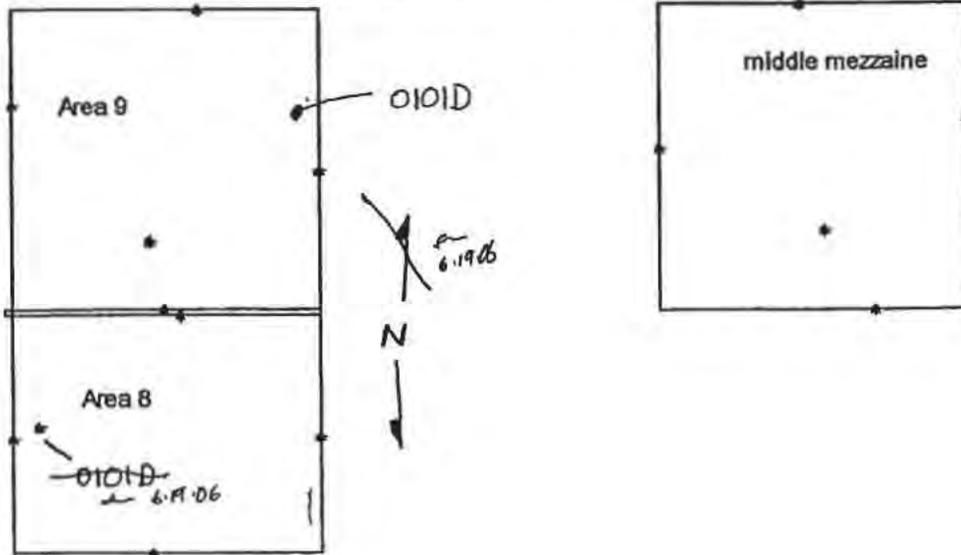
Alpha	43-68 BKG:	0	EFF:	0.2	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1611	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	N/A	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	N/A	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02B0101D	5922		5926	1	1	6/17/06	8:01	8	120	32
BETA	SYS02B0101D	5922		5926	2	1	6/17/06	8:02	187	60	1842



MT 06.0591

SYS-02B West Headhouse
Drains, Vents, and Utilities



COPY

F012/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T-006 Sx502B	SURVEY NO. MT-06-0598
PURPOSE: Follow up elevated	RWP NO. N/A
	DATE 6/26/06
	TIME 1000

MAP / DRAWING

SEE ATTACHED.

COPY

Reference RSDS MT-06-0248 for ORIGINAL
for 12w - 16w
13w - 13w
14w - 14w
15w - 15w

Reference RSDS MT-06-0247 for ORIGINAL
for 011w, 0112w, 0113w, 0114w, 0115w
011w - 011w
0112w - 0112w
0113w - 0113w
0114w - 0114w
0115w - 0115w

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr ($\beta + \gamma$) extremity on contact
K = factor of 1000
- - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
= air sample number #/a or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	S923 / S925	5/21/02
	A	
	A	

Completed by: (Signature) <i>Richardson</i>	Date: 6-26-06
Completed by: (Print Name) Richardson S. Hollaband	
Counted by: (Signature) SEE ATTACHED	Date: N/A
Counted by: (Print Name) Sheep	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: 6-26-06
Reviewed/Approved by: (Print Name) Jerry Taylor	

F213/353

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060626_1100.results
Comma-Delimited File Name: D:\MARSSIM LSC\MT-06-0598_001 ✓
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

COPY

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

F015/353

pg 30 of 8
R

Protocol# 1 - MARSSIM_Smear_1.lsa

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/26/06	11:01:10 AM	-1		10.00	9	9	12	2	607.26	0	20.8	B	1
6/26/06	11:12:00 AM	0		2.00	276	260	5	0	528.25	542	8.7		1
6/26/06	11:14:41 AM	1		2.00	2	2	0	0	631.55	4	245.1		1
6/26/06	11:17:23 AM	2		2.00	0	0	0	0	646.43	0	0.0		1
6/26/06	11:20:05 AM	3		2.00	3	3	0	0	655.87	5	193.7		1
6/26/06	11:22:48 AM	4		2.00	0	0	0	0	620.57	0	0.0		1
6/26/06	11:25:30 AM	5		2.00	2	2	0	4	646.65	4	220.6		1
6/26/06	11:28:10 AM	6		2.00	0	0	3	5	639.02	0	2192.2		1

COPY

F214/353

MT-06-0598
P9 4078

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_176
 Batch Ended: 6/26/06 10:14
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0598 [6] RICHARDSON 6-26-06 RLH ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.21		1.68	2.26	
A2	2	0.00	2.00		0.00	1.17	
A3	3	0.00	2.28		0.30	1.78	
A4	4	1.90	2.10		0.00	1.21	
B1	5	0.00	1.87		0.00	1.20	
B2	6	0.00	1.85		0.00	1.12	

h

h

COPY

Fair/353

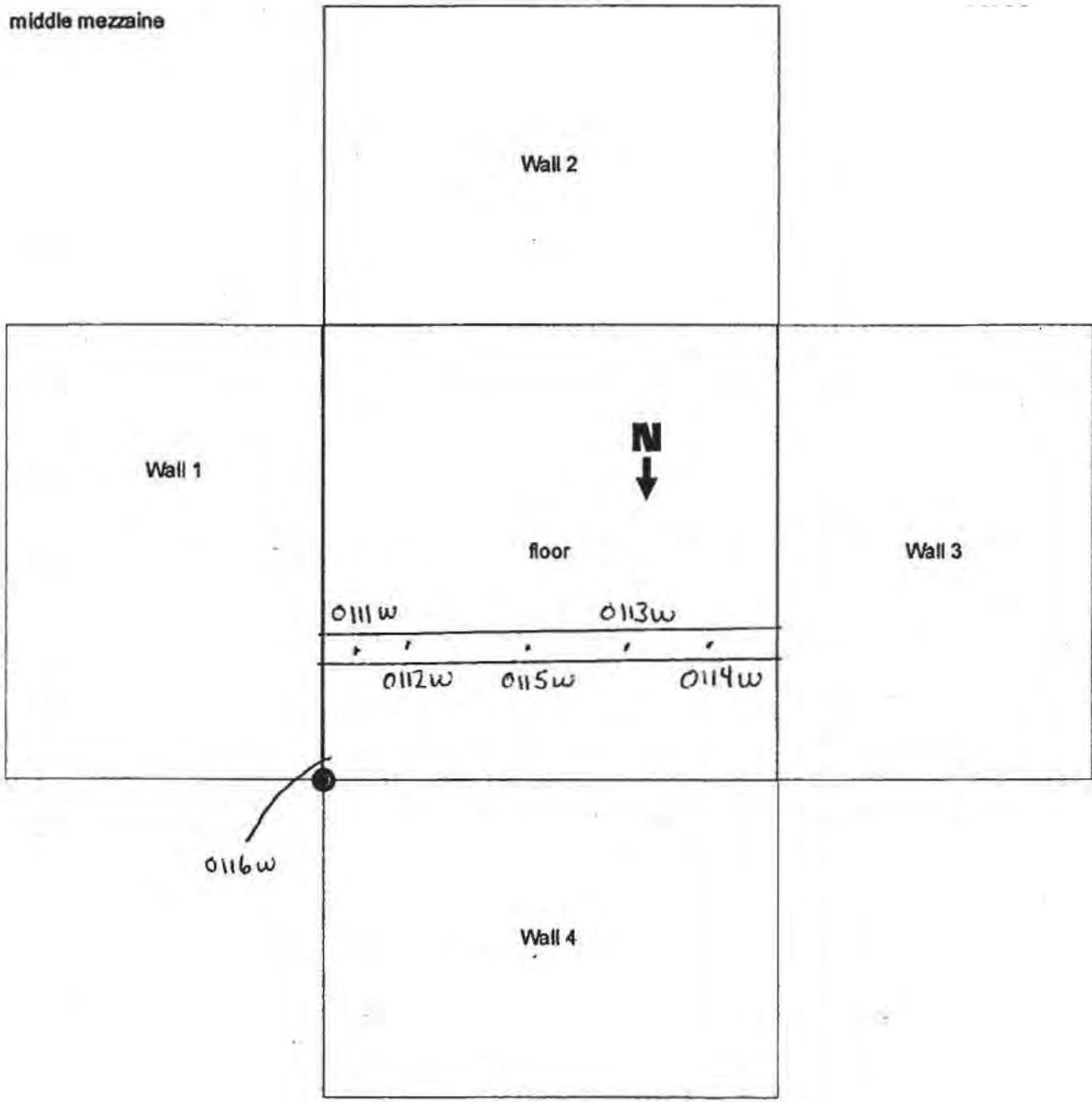
Page 4 of 4

pg 50F8
RLH

pg 80F8
MT-06-0598

SYS-02B
Bias measurement locations

middle mezzaine



COPY

F220/353

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of ⁸⁹ ~~4~~ 6/15/06

LOCATION: (BLDG/AREA/ROOM) TBLDG WEST HEAD HOUSE	SURVEY NO. MT-06-0407
PURPOSE: INVESTIGATION OF SCM SPOTS IN SY502C & SY502B SY502C	RWP NO. N/A
	DATE: 4/7/06
	TIME: 1420

MAP/DRAWING
 SCM 23 SCAN OF FLOOR 100% α/β
 POTENTIAL ELEVATED READINGS DETECTED DURING SCAN
 DIRECT READINGS ONLY. NO SMEARS
 See INDIVIDUAL MAPS FOR AREAS OF WALLS SCANNED α/β
 Reference RSDS# MT-06-0534 for location SY502C0101X
 Reference RSDS# MT-06-0577 for location SY502C0102X
 (0102X = 0115Z)

see attached map

SCM summary attached

INSTRUMENT	SERIAL#	CAL DUE DATE
SCM 23	R-180	6-1-06
SCM 23	C-180	6-1-06

COPY

LEGEND: # = mrem/hr (γ) whole body
 # E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact

Δ # = mrem/hr neutron

= swipe number

= air sample number

#/ α or β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5923/5925	5/17/06
 		
 		
 		

Completed by: (Signature) Wayne Jones	Date: 4/7/06
Completed by: (Print Name) WAYNE JONES	
Counted by: (Signature) N/A	HP# N/A Date: N/A
Counted by: (Print Name) N/A	F291/353
Reviewed/Approved by: (Signature) Jerry Taylor	Date: 5-11-06
Reviewed/Approved by: (Print Name) Jerry Taylor	

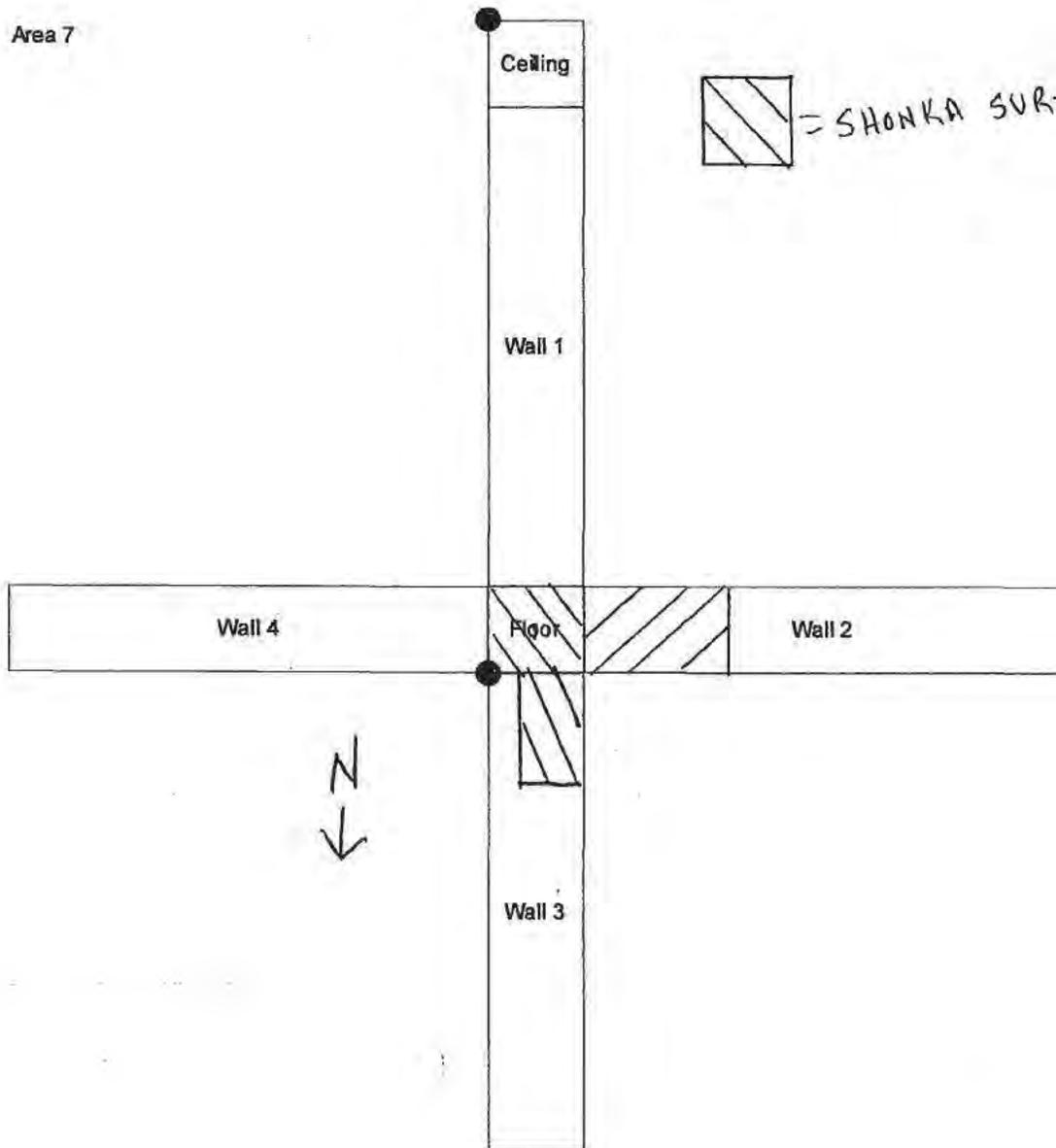
SYS-02C T99 through brickwall to East part of the West Headhouse airshaft

Class 1 Scan 100% of floor and accessible walls < 2 meters

~~Scan 100% of wall #3, (North wall)~~ SCAN 50% OF WALL 3 Below 2'

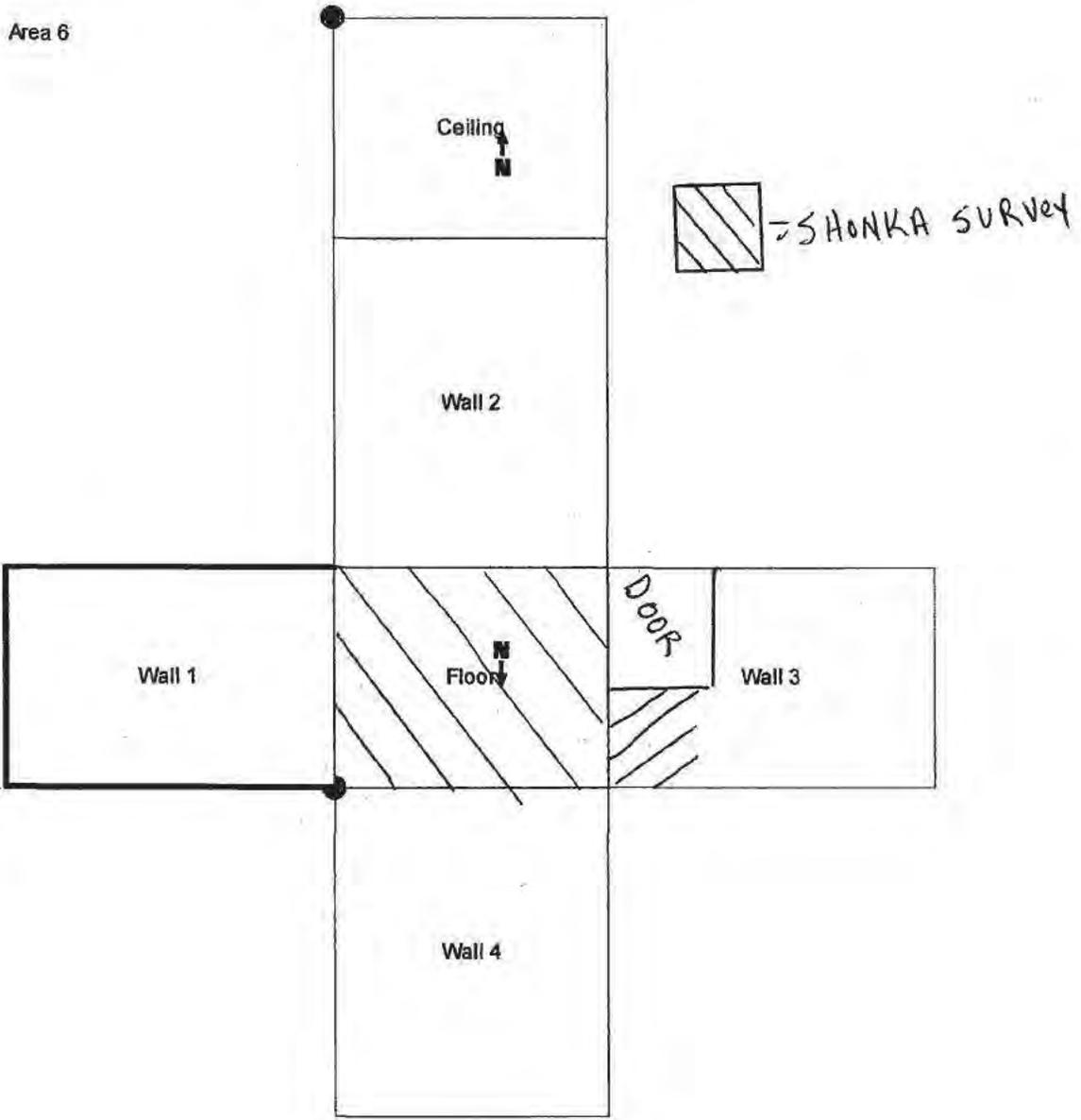
~~Scan 25% of accessible walls above 2 meters~~ WJ 6/15/06

Area 7



COPY
F003/353

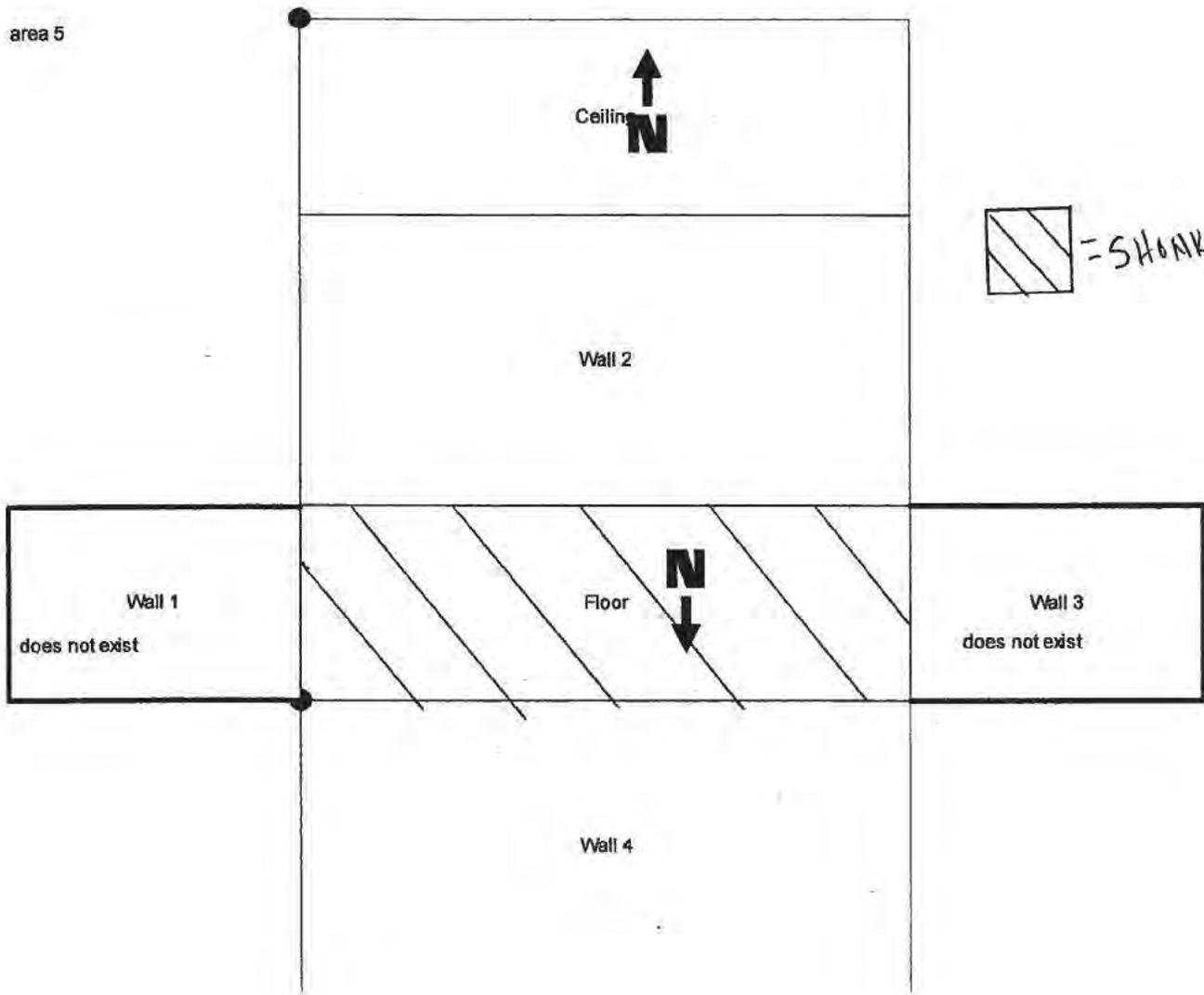
SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 25% of faccessible walls above 2 meters *uj 6/15/06*



COPY

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and walls < 2 meters
Scan 25% of floor above 2 meters — WJ 6/15/06

area 5



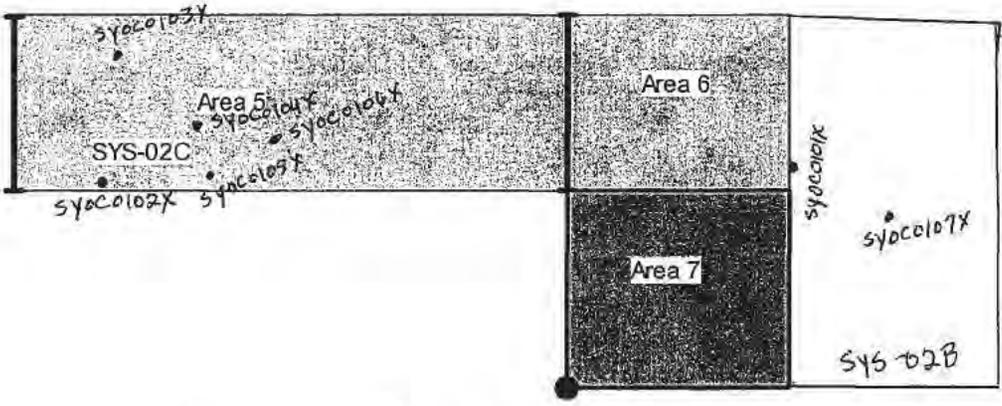
COPY

F225/353

MT-06-0407

6/15/06
6/15/06
3944
Copy of 8/19/06

**SYS-02C From ladder to East part of the West Headhouse airshaft
Class 2 Plan View (laid flat on side)**



COPY

- SYOC0101X - BRICK WALL GOING INTO AREA 6
- 0102X - NORTH WALL
- 0103X - ON FLOOR
- 0104X - ON FLOOR
- 0105X - ON FLOOR
- 0106X - ON FLOOR
- 0107X - ON FLOOR } for BK6 purposes

F226/353

T-Building Investigation Survey of SCM spots

RSDS# MT-06-0407

RCT: [REDACTED]

RCT: N/A

Alpha	43-68 BKG:	0	EFF:	0.2073	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1578	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	S02C0101X	5923	[REDACTED]	5925	1	1	4/7/06	12:29	304	120	1164
ALPHA	S02C0102X	5923		5925	1	2	4/7/06	12:36	490	120	1876
ALPHA	S02C0103X	5923		5925	1	3	4/7/06	12:42	35	120	134
ALPHA	S02C0104X	5923		5925	1	4	4/7/06	12:48	1507	120	5770
ALPHA	S02C0105X	5923		5925	1	5	4/7/06	12:53	111	120	425
ALPHA	S02C0106X	5923		5925	1	6	4/7/06	12:57	42	120	161
ALPHA	S02C0107X	5923		5925	1	7	4/7/06	13:01	40	120	153
BETA	S02C0101X	5923		5925	2	1	4/7/06	12:30	359	60	3611
BETA	S02C0102X	5923		5925	2	2	4/7/06	12:37	178	60	1790
BETA	S02C0103X	5923		5925	2	3	4/7/06	12:43	1671	60	16808
BETA	S02C0104X	5923		5925	2	4	4/7/06	12:49	1713	60	17231
BETA	S02C0105X	5923		5925	2	5	4/7/06	12:54	252	60	2535
BETA	S02C0106X	5923		5925	2	6	4/7/06	12:58	359	60	3611
BETA	S02C0107X	5923		5925	2	7	4/7/06	13:03	425	60	4275

N
A

COPY

MT-06-0407

PF 979

Surface Contamination Monitor Survey Investigation Summary Revision 0

Survey Unit: West Head House	SCM Survey Unit: 1N-99, 19-91
SCM ID	SCM 23
Calibration Due Date	06-01-06

	Room	Surface	*Spots from SCM Characterization	*HH Investigations
54502B	Bottom of HH	Floor	~50	
↓	Bottom of HH	Walls	36	
*54502C	Bottom of Adjacent HH	Floor	100s	
*54502C	Bottom of Adjacent HH	Walls	28	
54502B	HH Mezzanine	Walls	1 Large area near weir.	
54502C	Adjacent HH Mezzanine	Walls	1	
54502B	Top of HH	Walls	40	

*Due to the close proximity of spots one mark may include more than one spot resulting in a different number of Hand Held investigations performed.

Name Javid Kelley

Signature _____

Date 5-31-06

* AREAS SURVEYED THIS RSDS

COPY

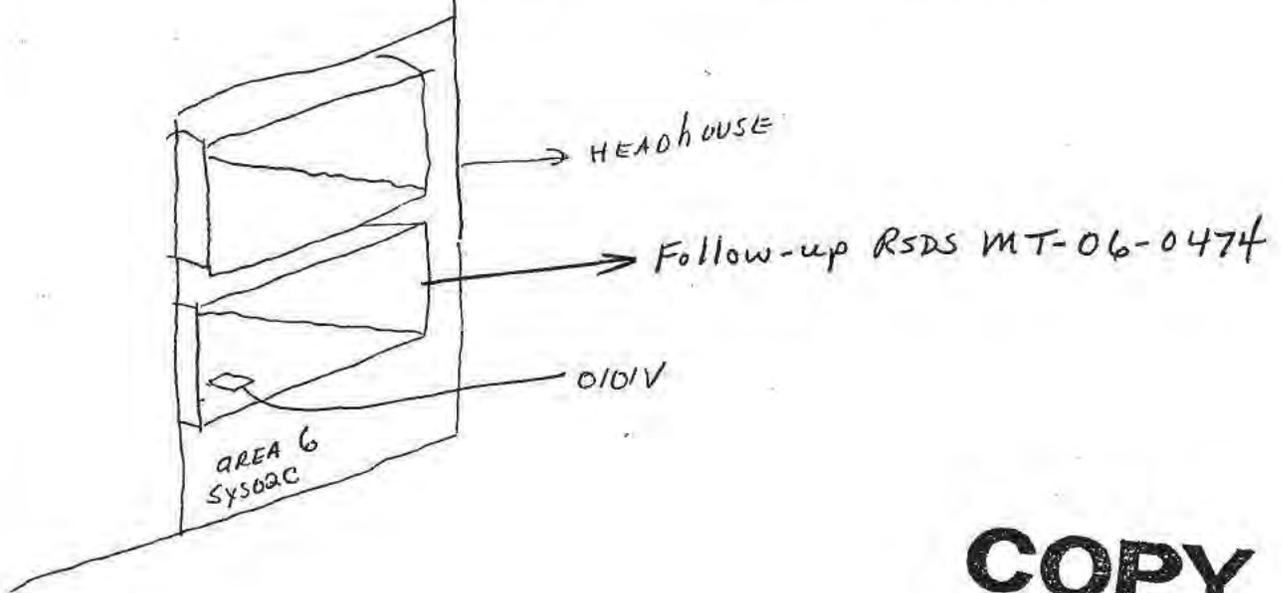
RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 7

LOCATION: (BLDG./AREA/ROOM) T. BLDG 99 CRAWLSPACE	SURVEY NO. MT-06-0417 ✓
PURPOSE: open ends VENTILATION SYSO2C	RWP NO. N/A
	DATE: 4-11-06
	TIME: 1400

MAP/DRAWING

SCANNED INSIDE VENTILATION
 α/β & CONTAMINATION EXIST
 THROUGHOUT. HIGHEST SCAN LOCATION
 IS WHERE READING OBTAINED.



COPY

LEGEND: # = mrem/hr (γ) whole body
 # E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact

Δ # = mrem/hr neutron
 # = air sample number

= swipe number
 #/ α or #/ β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
235U	5928/5927	5/24/06
N A		

Completed by: (Signature) <i>[Signature]</i>	Date: 4/11/06
Completed by: (Print Name) SKIRWATSON	
Counted by: (Signature) SEE ATTACHED	HP# N/A Date: N/A
Counted by: (Print Name) SHEETS	F230/353
Reviewed/Approved by: (Signature) <i>[Signature]</i>	Date: 4/19/06
Reviewed/Approved by: (Print Name) Jerry Taylor	

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_4\20060412_1609.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0417.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_4.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life

Regions	Half Life	Units	Reference Date	Reference Time
A				

COPY
1030/353

Pg 3 of 7
GMD

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
4/12/06	4:10:09 PM	-1	10.00		9	9	12	4	623.90	0	20.8	B	4
4/12/06	4:20:58 PM	0	2.00		152	141	0	0	546.73	295	11.9		4
4/12/06	4:23:40 PM	1	2.00		0	0	0	0	600.82	0	0.0		4

COPY

1033/353

pg 4 of 7
MT-06-0417

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_009
Batch Ended: 4/12/06 15:01
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0417 RICARDSON (1) AG

Detector ID	Sample ID
A1	1

Alpha Activity		
DPM	σ	flags
0.00	2.18	

Beta Activity		
DPM	σ	flags
0.00	1.31	

Form 353
COPY

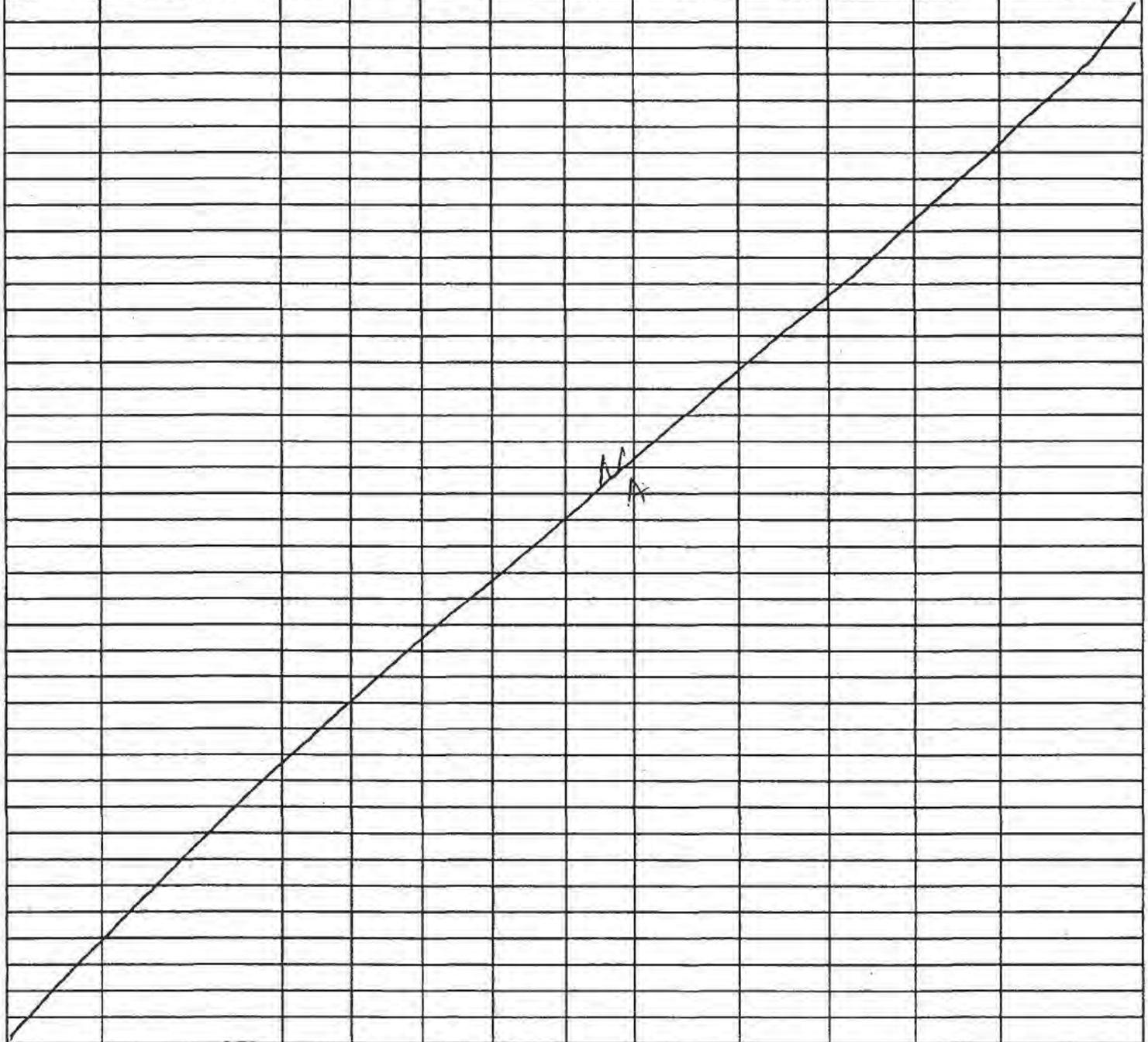
pg 5 of 7

pd

T-Building open ends ventilation

RSDS# MT-06-0417 RCT: RCT:

Alpha	43-68 BKG:	0	EFF:	0.22	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.168	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02C0101V	5928		5927	1	1	4/11/06	12:38	486	120	1753
BETA	SYS02C0101V	5928		5927	2	1	4/11/06	12:39	205	60	1937



COPY

F235 | 353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <i>T Bldg T99 crawlspace</i>	SURVEY NO. <i>MT-06-0474</i>
PURPOSE: <i>MARSSIM - INVESTIGATIVE (Post Remediation) Unit - 54502C (area 5)</i>	RWP NO. <i>NA</i>
	DATE: <i>5-2-06</i>
	TIME: <i>0930</i>

MAP / DRAWING

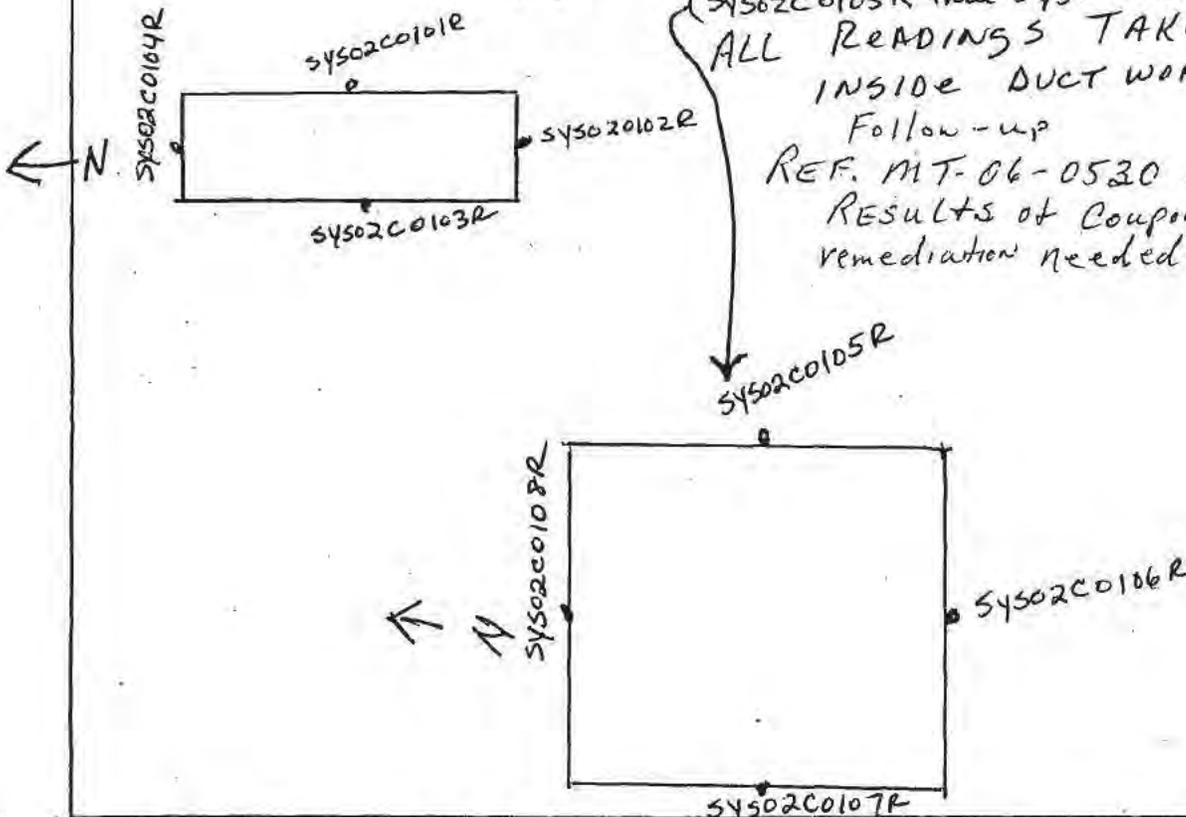
Surveyed open end after ductwork removed. Performed scan survey with no elevated readings detected during scan, (alpha or beta). ~~Reference MT-06-0530 6/15/04~~

Reference *MT-06-0417 54502C0101V*
(*54502C0105R thru 54502C0108R*)

ALL READINGS TAKEN 8 to 12" INSIDE DUCT WORK

Follow-up

REF. *MT-06-0530 ANALYTICAL RESULTS of Coupon, No further remediation needed on 54502C0108R.*



LEGEND:
 # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - = radiological boundary

COPY

△ # = mrem/hr neutron # = swipe number
 □ # = air sample number # α or # β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5928/5927	5-24-06 ✓
N A		

Completed by: (Signature) <i>Wayne Jones</i>	Date: <i>5-2-06</i>
Completed by: (Print Name) <i>Wayne Jones / Geomie Hodges</i>	
Counted by: (Signature) <i>see attached</i>	Date:
Counted by: (Print Name)	
Reviewed/Approved by: (Signature) <i>Serry Taylor</i>	Date: <i>5-11-06</i>
Reviewed/Approved by: (Print Name) <i>Serry Taylor</i>	

F2257/353

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060502_1319.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0474.001 *CM*
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life

Units Reference Date Reference Time

A

COPY
F031/353

3087

R

Protocol# 1 - MARSSIM Smear 1.1sa

User: 5801

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/2/06	1:19:50 PM	-1	10.00		10	10	11	6	607.71	0	19.7	B	1
5/2/06	1:30:40 PM	0	2.00		301	281	0	0	532.46	589	8.3		1
5/2/06	1:33:23 PM	1	2.00		9	6	0	0	524.24	17	74.8		1
5/2/06	1:36:07 PM	2	2.00		10	9	1	0	403.98	22	68.4		1
5/2/06	1:38:49 PM	3	2.00		2	1	0	0	589.37	3	348.5		1
5/2/06	1:41:32 PM	4	2.00		11	10	0	0	510.01	22	61.4		1
5/2/06	1:44:16 PM	5	2.00		3	3	1	27	453.64	5	213.4		1
5/2/06	1:47:01 PM	6	2.00		0	0	0	15	342.36	0	0.0		1
5/2/06	1:49:44 PM	7	2.00		0	0	2	50	357.42	0	0.0		1
5/2/06	1:52:33 PM	✓8	2.00		0	0	3	50	210.79	0	0.0		1

CM

COPY
E310/353

487
MT-06-0474

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Msr_057
 Batch Ended: 5/2/06 12:31
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

GH

Batch ID: MT-06-0474 [8] JONES 5-2-06 RLH ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
B1	1	0.00	1.89		0.25	1.68	
B2	2	0.00	1.93		3.82	2.50	
B3	3	0.00	2.20		0.27	1.88	
B4	4	0.00	2.01		3.04	2.39	
C1	5	0.00	2.08		0.00	1.78	
C2	6	0.00	1.97		2.78	2.30	
C3	7	0.00	2.16		2.97	2.53	
C4	✓ 8	3.60	2.84		4.68	2.78	

GH

GH

Form 353
COPY

5057

0

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
1	SCE	- ATTACHED		015
2		L		025
3	SCE	ATTACHED		035
N A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
N A				

COPY

COMMENTS: **N/A**

- NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
 2. To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
 3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. (If not needed, mark N/A.)

F045/353

Protocol# 1 - MARSSIM_Smear_1.lsa

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060517_1453.results
Comma-Delimited File Name: D:\MARSSIM LSC\MT-06-0524.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

10116/353
COPY

MT-06-0524
P430F8
[Signature]

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/17/06	2:54:12 PM	-1		10.00	11	10	13	12	606.05	0	19.2	B	1
5/17/06	3:05:03 PM	0		2.00	267	253	0	1	533.16	523	8.9		1
5/17/06	3:07:46 PM	1		2.00	110	101	0	3	395.77	252	14.3		1
5/17/06	3:10:30 PM	2		2.00	174	160	0	3	403.81	395	11.1		1
5/17/06	3:13:12 PM	✓3		2.00	342	313	0	1	449.29	731	7.8		1

7847/353
COPY

pg 4 of 8
mt-06.0524

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_115
Batch Ended: 5/17/06 14:05
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0524 [3] RICHARDSON/DICK 5-17-06 RLH ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
B1	1	0.00	1.93		2.62	2.38	
B2	2	3.52	2.63		1.19	1.93	
B3	✓3	1.91	2.20		0.05	1.88	

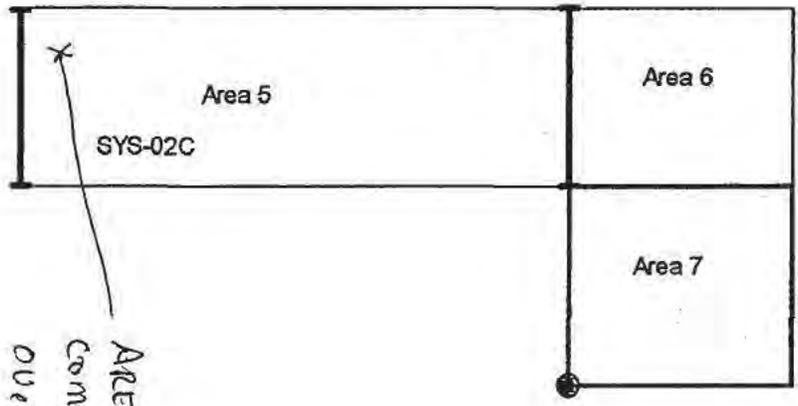
FWR/353
COPY

5-22-06
Page 1 of 1

pg 5 of 8

RLH

SYS-02C From ladder to East part of the West Headhouse airshaft
Class 2 Plan View (laid flat on side)



AREA 5 WHERE VENTILATION
COMES INTO AREA 5 FROM
OVERHEAD AREA 4

Pg 80F-8
MT-06-0524

COPY

F251/353

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 1

11 04 06-00
 78 015/06 92

LOCATION: (BLDG./AREA/ROOM)	T BLDG WEST EAST SIDE OF HEAD HOUSE	SURVEY NO.	MT-06-0529
PURPOSE:	SCAN OF WALLS AND FLOOR 1 elevated readings during scan checked with static readings	RWP NO.	N/A
	SY502C	DATE:	5/18/06
		TIME:	1340

REF. ORIGINAL RSDS
 MT-06-0561 6/15/06
 4/15/06

MAP / DRAWING

Floor, walls up to 7' scanned 100% for
 Alpha + Beta
 walls above 7' scanned 25% for Alpha + Beta
 Follow-up RSDS Post Remediation MT-06-0561
 SY502C0101E = SY502C0101PR

see attached map

COPY

- LEGEND:
- # = mrem/hr (γ) whole body
 - #E = mrem/hr ($\beta + \gamma$) extremity on contact
 - K = factor of 1000
 - = radiological boundary
 - Δ # = mrem/hr neutron
 - \square # = air sample number
 - \circ # = swipe number
 - \circ # α or β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5895/5896	3/23/07 ✓

Completed by: (Signature)	Wayne Jones	Date:	5/18/06
Completed by: (Print Name)	Wayne Jones		
Counted by: (Signature)	see attached	HP#	N/A
Counted by: (Print Name)		Date:	N/A
Reviewed/Approved by: (Signature)	Jerry Taylor	Date:	6-15-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

F552/353

11
Pg 308 X
6/15/06
6250-90-LM

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Msr_126
Batch Ended: 5/22/06 15:11
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0529 W.JONES (1) AG

Detector ID	Sample ID
AI	1

Alpha Activity		
DPM	σ	flags
0.00	2.20	

wg

Beta Activity		
DPM	σ	flags
0.38	1.85	

wg

COPY
F354

F354/353

Page 1 of 1 wg
5/24/06

MT-06-0529
pg 4/7
6/15/06

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

COPY

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060522_1623.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0529.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

FSS/353



MARSSIM Smear Data

COPY

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/22/06	4:23:48 PM	-1	10.00		9	7	11	25	609.28	0	21.7	B	1
5/22/06	4:34:37 PM	0	2.00		271	259	1	1	531.81	531	8.8		1
5/22/06	4:37:21 PM	1	2.00		2	1	1	13	580.44	4	242.8		1

WJ

18X
6/25/17
pg 5 of 8d

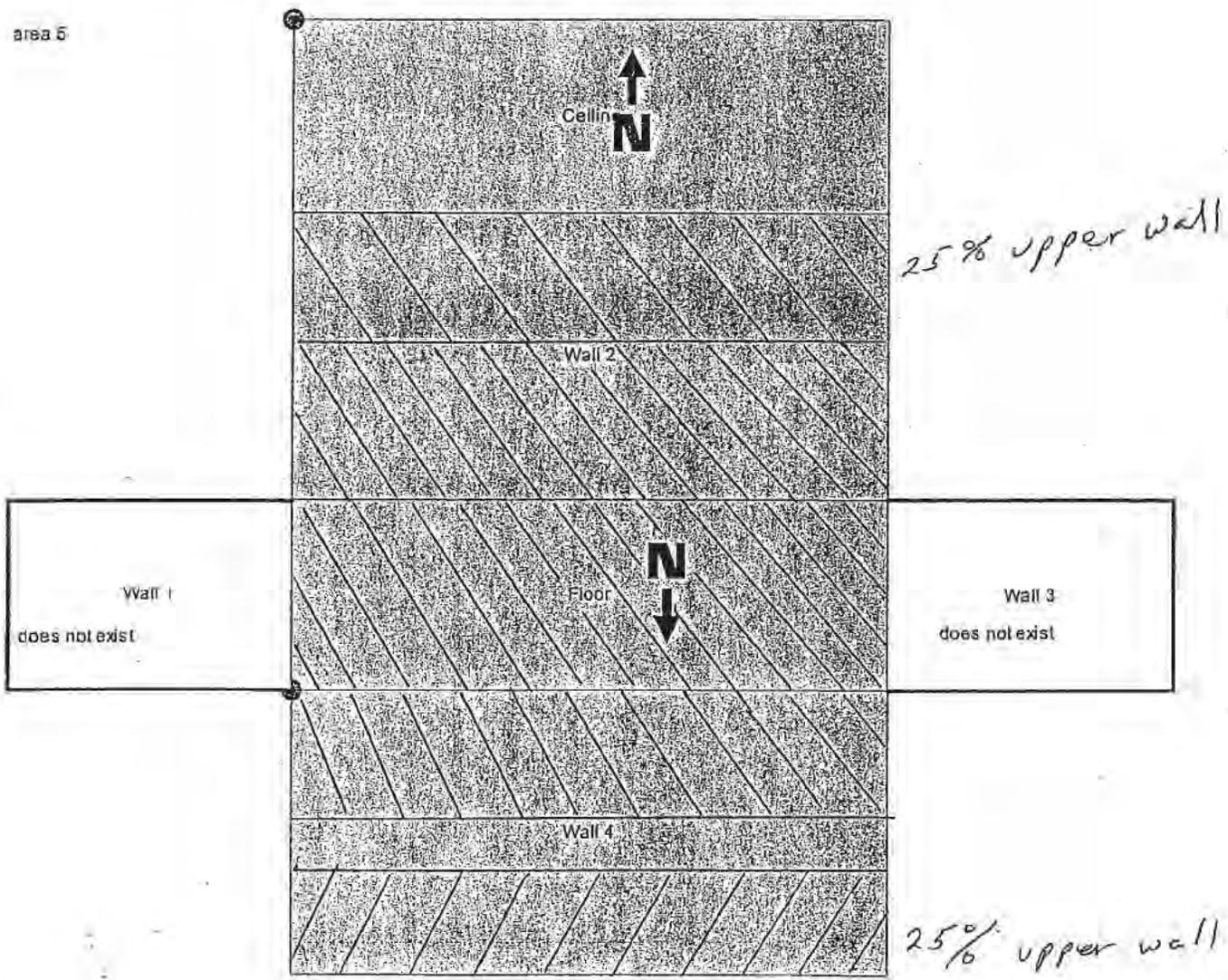
6250-90-1W

Fask/353

9 of 11
646-26-06
MT-06-0529

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and walls < 2 meters
Scan 25% of floor above 2 meters

area 5

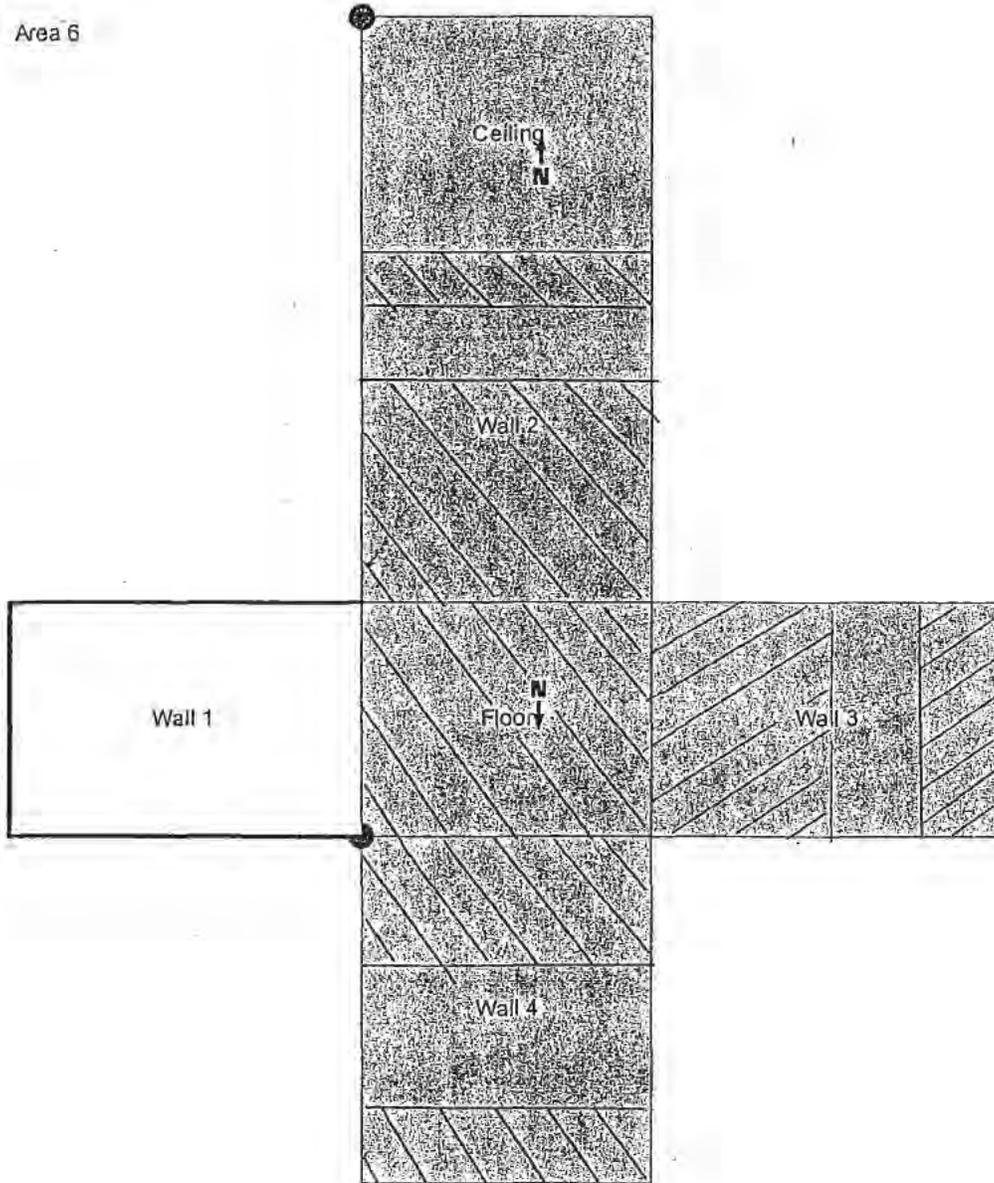


COPY
FJ60/353

10
9 of 10
8M.6-26-06
MT-06-052

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 25% of accessible walls above 2 meters

Area 6



COPY

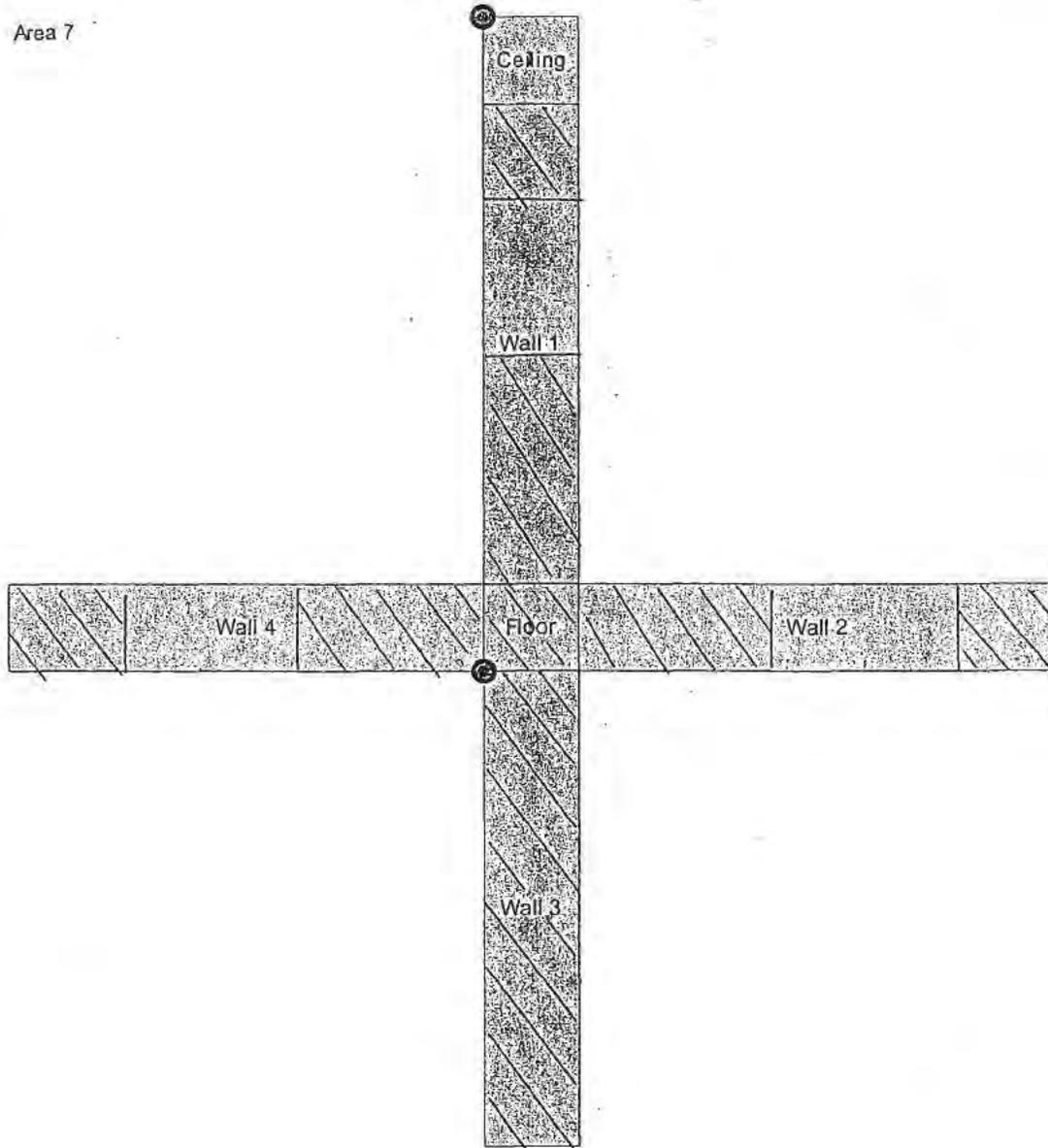
F261353

MT-06-0529

11 6th 26th 11
~~10~~ of ~~10~~
MT-06-052

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 Scan 100% of floor and accessible walls < 2 meters
Scan 100% of accessible wall #3, (North wall)
Scan 25% of accessible walls above 2 meters

Area 7



COPY

F262/353

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 45

LOCATION: (BLDG/AREA/ROOM)	T-BL06 99 CRAWLSPACE	SURVEY NO.	MT-06-0530
PURPOSE:	Coupon cut for LAB (E-22)	RWP NO.	N/A
SY502C		DATE:	5-19-06
		TIME:	1600

REF. ORIGINAL MT-06-474 MAP/DRAWING

SEE ATTACHED

SCANNED INSIDE VENTILATION & 1p-

READING AND COUPON EXTRACTED FROM HIGHEST SCAN RESULTS ABOVE H₂O LEVEL.

NO SMEAR TAKEN
ANALYTICAL GAMMA Spec Results attached
This covers elevated reading
MT-06-0474 SY502 @ 0108 R
112 Dpm/100 cm²

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr (β+γ) extremity on contact
K = factor of 1000
- - - - = radiological boundary

COPY

△ = mrem/hr neutron ⊙ = swipe number
□ = air sample number ⊙/α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11-15-06 ✓
	N	
	A	

Completed by: (Signature)	<i>[Signature]</i>	Date:	5-19-06
Completed by: (Print Name)	S. RICHARDSON	Date:	6/2/06
Counted by: (Signature)	<i>[Signature]</i>	Date:	6/15/06
Counted by: (Print Name)	AL DICK	Date:	6/15/06
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-15-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

GAMMA ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL11408
 File ID: 1SC04149.s0
 Priority Yes

Description/Location

0601458 E-22 Vent Duct Head House

Collector:

Date Received: 05/22/06

Date Collected: 05/19/06

<u>Radionuclide</u>	<u>Activity (dpm)</u>	<u>MDA</u>
Co-60	1.08	1.71
Cs-137	0	1.15
Pb-210 ✓	8.44	6.52
Ra-226	0	14.08
Ac-227	0.53	3.15
Th-230	0	77.55
Th-232	4.3	4.87
Pu-238	0	28.65
Am-241	0	0.76
Bi-207	0	0.92
Bi-210m	0.48	1.02
Ag-108m	0	1.1
U-238d	0	229.1

Comments

COPY

Date: 05/30/06

Counted By:

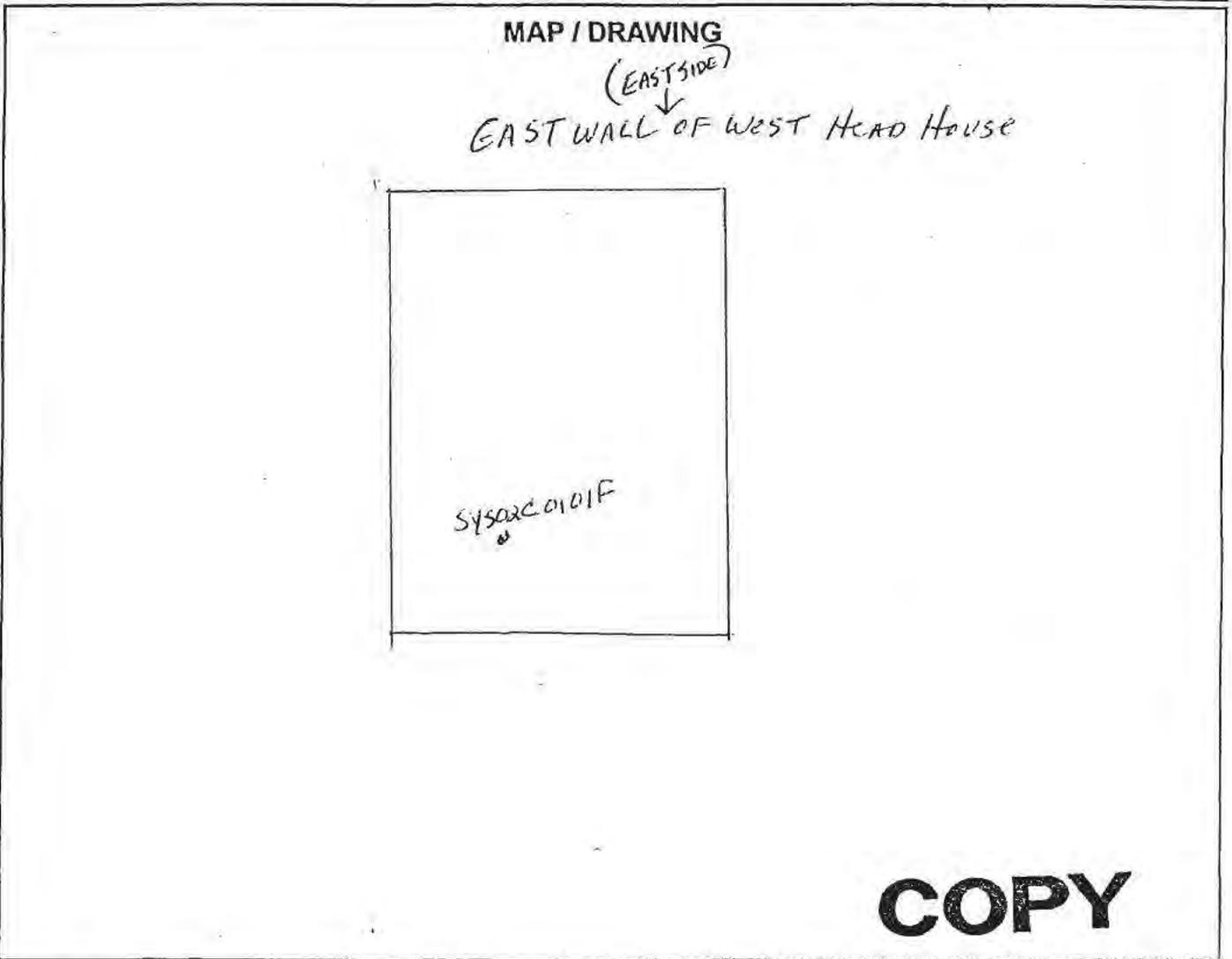
Analyzed By:

Initials

GS

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T BLDG EAST WALL OF WEST HEAD HOUSE	SURVEY NO.	MT-06-0534
PURPOSE:	INVESTIGATION OF SCM SPOT	RWP NO.	N/A
	54502C	DATE:	5/22/06
		TIME:	1210



COPY

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr ($\beta + \gamma + \gamma$) extremity on contact
- K = factor of 1000
- - - = radiological boundary
- \triangle # = mrem/hr neutron
- \square # = air sample number
- \circ # = swipe number
- \circ #/ α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/06
 	 	
 	 	

Completed by: (Signature)	Wayne Jones	Date:	5/22/06
Completed by: (Print Name)	Wayne Jones		
Counted by: (Signature)	See attached	HP#	Date:
Counted by: (Print Name)			
Reviewed/Approved by: (Signature)	David R. Jones	Date:	6-19!
Reviewed/Approved by: (Print Name)	David R. Jones		Page 1/353

W Jones

MT-06-0534 pg 3 of 6

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_127
Batch Ended: 5/22/06 15:11
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0534 W.JONES (1) AG

COPY

Detector ID	Sample ID
BI	1

Alpha Activity		
DPM	σ	flags
0.00	1.93	

Beta Activity		
DPM	σ	flags
2.62	2.38	

wj

wj

F 270/353

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060522_1639.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0534.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

COPY

pg 4 of 6

MT-06-0534

Feb 11 3:53

MARSSIM Smear Data

COPY

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
5/22/06	4:40:24 PM	-1	10.00		9	8	10	7	609.50	0	21.2	B	2
5/22/06	4:51:14 PM	0	2.00		51	49	0	5	535.09	99	21.8		2
5/22/06	4:53:57 PM	1	2.00		2	1	2	5	626.87	4	241.0		2

wg

M706-0534 pg 506

F07e/353

T-Building Investigation of SCM Survey SYS02C

RSDS# MT-06-0534

RCT:

RCT:

Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS020101F	5920		5929	1	1	5/22/06	8:36	9	120	34
BETA	SYS020101F	5920		5929	2	2	5/22/06	8:37	144	60	1429

COPY

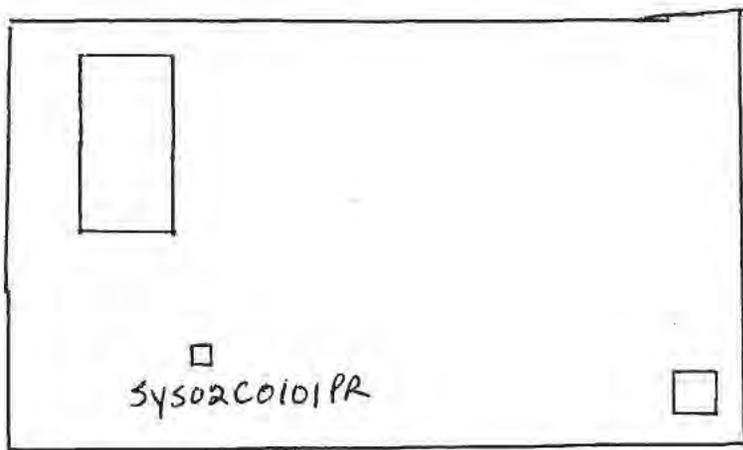
F073/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	TBLDG EAST side of West Head House	SURVEY NO.	MT-06-0561
PURPOSE:	Post Remediation on floor east side of west head house	RWP NO.	N/A
	54502C	DATE:	6/2/06
		TIME:	1010

MAP / DRAWING

Refer to MT-06-0529 (54502C0101E)
 NO ELEVATED α/β LEVELS DETECTED DURING SCAN



LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta+\eta+\gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

\triangle # = mrem/hr neutron # = swipe number
 # = air sample number #/ α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920 5920 6/2/06	11/15/06

Completed by: (Signature)	Wayne Jones	Date:	6/2/06
Completed by: (Print Name)	WAYNE JONES		
Counted by: (Signature)	all attached	HP#	N/A
Counted by: (Print Name)			N/A
Reviewed/Approved by: (Signature)	Jerry Taylor	Date:	6-15-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

COPY

MT-06-0561 pg 3 of 6

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_149
Batch Ended: 6/5/06 7:52
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0561 [1] W. JONES 6-5-06 RLH

Detector ID	Sample ID
B1	1

Alpha Activity		
DPM	σ	flags
0.00	1.87	

wy

Beta Activity		
DPM	σ	flags
0.00	1.20	

wy

COPY

F 275/353

R

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 5801

MARSSIM Smear Data

COPY

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060605_0900.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0561.001 ✓
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00

Quench Set:

Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life

Regions	Half Life	Units	Reference Date	Reference Time
A				

960406

1950-90-111

F270/353

Q

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/5/06	9:01:01 AM	-1	10.00		10	9	11	3	612.56	0	20.4	B	2
6/5/06	9:11:51 AM	0	2.00		37	36	1	1	539.88	72	26.5		2
6/5/06	9:14:33 AM	✓1	2.00		1	1	0	0	653.18	2	366.3		2

ug

COPY

*pg 5 of 6
1950-90-1M*

F217/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) TBLDG AREAS 5, 6 & 7	SURVEY NO. MT-06-0572
PURPOSE: SCAN OF WALLS 5cm/2350	RWP NO. N/A
	DATE: 6/6/06
SYSO2C	TIME: 1325

MAP / DRAWING

~~SCM SCAN OF WALLS FOR α/β POTENTIAL ELEVATED LEVELS DETECTED~~
 (SCM/2350) WALLS SCANNED 100% FOR alpha & beta
 up to 7'. SCANNED 25% FOR alpha & beta
 Above 7' POTENTIAL ELEVATED
~~NO α/β ELEVATED Levels~~
 6/26/06 ~~6-15-06~~
 Detected DURING SCAN

Follow up MT-06-0573 FOR POTENTIAL ELEVATED LEVELS DETECTED DURING SCAN

See attached maps

Instrument	Serial #	Cal Due Date
SCM 23	R-180	6-1-06
SCM 23	C-180	6-1-06

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \eta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
 # = air sample number # α or β = direct contamination
 max: [redacted] (m/100 cm²)

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5923/5925	5/21/07 ✓
2350	5922/5926	5/21/07 ✓
2350	5920/5929	11/15/06 ✓

Completed by: (Signature) <i>Wayne Jones</i>	Date: 6/6/06
Completed by: (Print Name) Wayne Jones, Scott Hollabaugh	
Counted by: (Signature) <i>N/A</i>	HP# N/A Date: N/A
Counted by: (Print Name) N/A	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: 6/15/06
Reviewed/Approved by: (Print Name) Jerry Taylor	

F279/353 AD

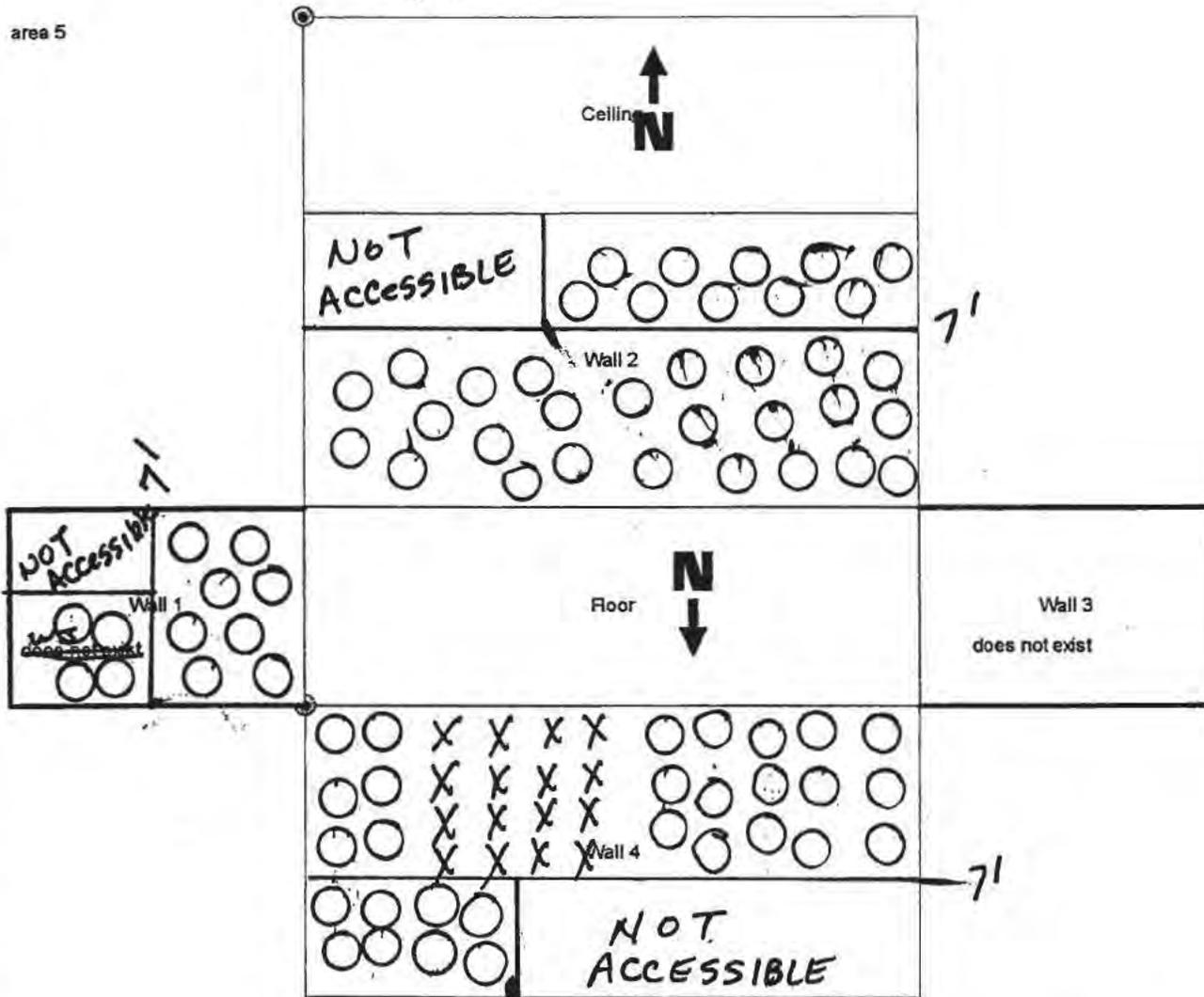
SYS-02C T99 through brickwall to East part of the West Headhouse airshaft

Class 1 Scan 100% of floor and walls < 2 meters

Scan 25% of floor above 2 meters

6/16/06

area 5



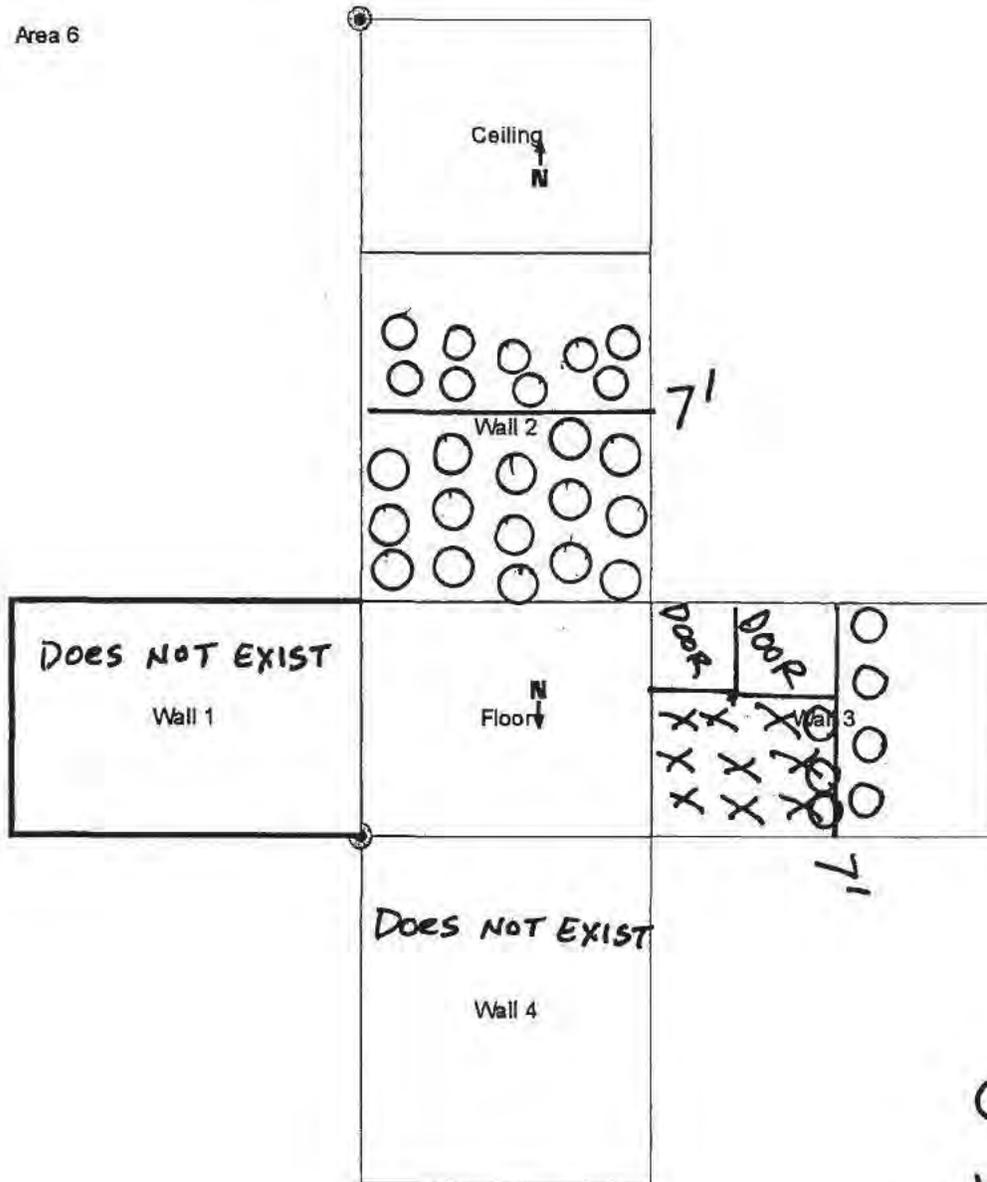
○ = 2350 SURVEY
 X = SCM SURVEY

COPY

F281/353

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
 Class 1 Scan 100% of floor and accessible walls < 2 meters
 Scan 25% of faccessible walls above 2 meters

Area 6



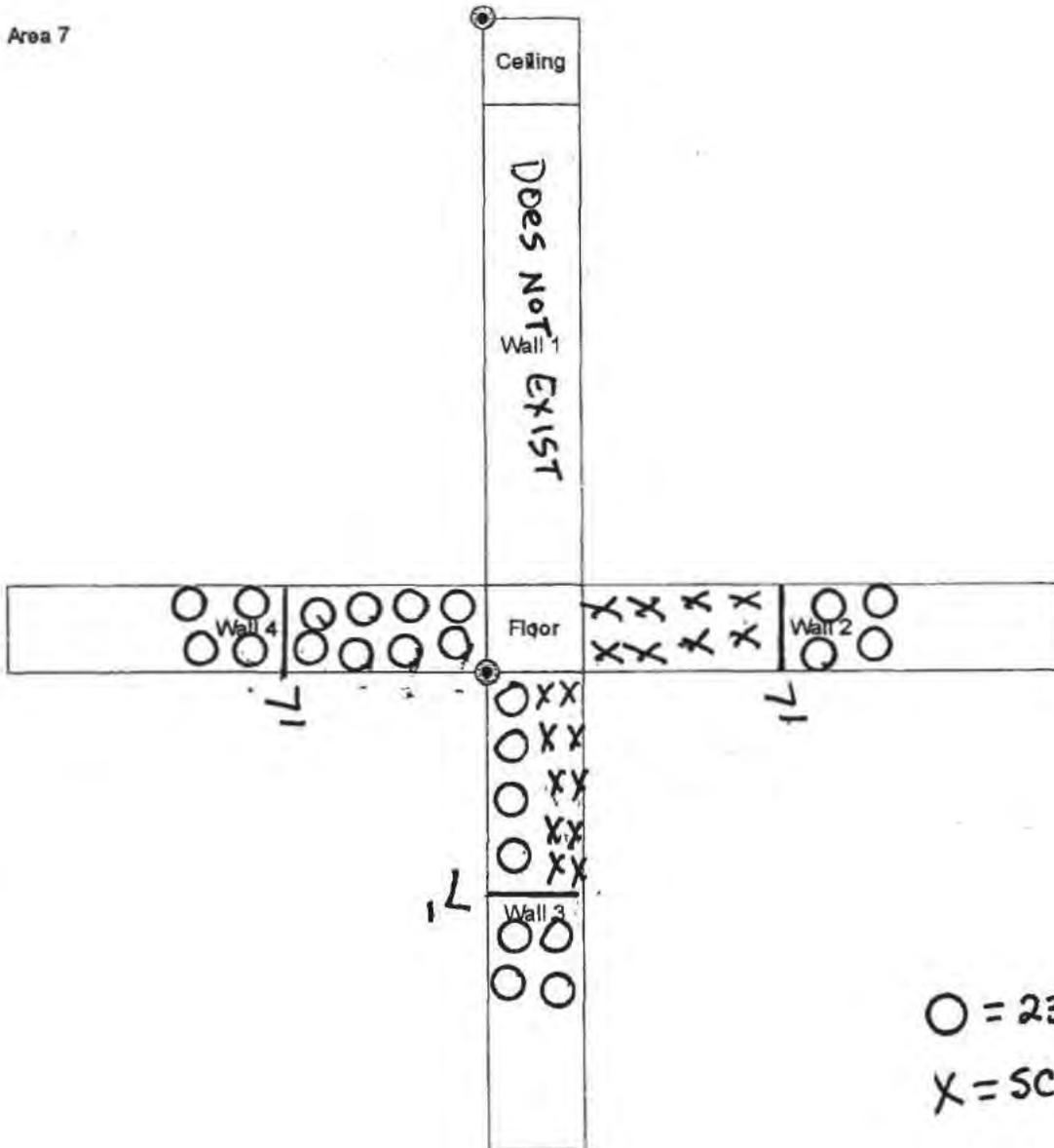
O = 2350 SURVEY
 X = SCM SURVEY

COPY

F200/353

SYS-02C T99 through brick wall to East part of the West Headhouse airshaft
Class 1 Scan 100% of ^{was 6/6/08} floor and accessible walls < 2 meters
Scan 100% of wall #3, (North wall)
Scan 25% of accessible walls above 2 meters

Area 7



O = 2350 SURVEY
X = SCM SURVEY

COPY

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T BLDG 99 CRAWLSPACE	SURVEY NO.	MT-06-0573
PURPOSE:	follow up ELEVATED SCANS SYSD2C	RWP NO.	N/A
		DATE:	6/6/06
		TIME:	1600

MAP / DRAWING
REF. MT-06-0572 ORIGINAL SCAN OF WALLS & /B' SCM/2350 SURVEY

SEE ATTACHED

NOTE! ALL 25 READINGS
WILL BE REMEDIATED

Reference RSDS# MT-06-0577 for Past Remediation Survey results.

COPY

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - - = radiological boundary

Δ # = mrem/hr neutron # = swipe number
 # = air sample number #/a or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920 / 5929	11 / 15 / 06
	N	
	A	

Completed by: (Signature)	<i>[Signature]</i>	Date:	6-6-06
Completed by: (Print Name)	Richardson, G. Hodges		
Counted by: (Signature)	<i>[Signature]</i>	HP#	N/A
Counted by: (Print Name)	Sheets	Date:	N/A
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Hi	F284/353
Reviewed/Approved by: (Print Name)	Jerry Taylor	Date:	6-26-06

[Handwritten initials]

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060607_0817.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0573.001 ✓
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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MARSSIM Smear Data

B
C

Instrument Block Data
 Machine=Tri-Carb 2900TR
 Version=2.06
 423022
 MODEL=Tri-Carb 2900TR
 VERSION=2.06
 SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/7/06	8:18:23 AM	-1		10.00	9	9	10	9	606.16	0	20.6	B	1
6/7/06	8:29:13 AM	0		2.00	283	270	2	0	533.25	554	8.6		1
6/7/06	8:31:57 AM	1		2.00	4	4	0	4	485.74	8	135.3		1
6/7/06	8:34:39 AM	2		2.00	3	3	0	0	562.47	5	188.3		1
6/7/06	8:37:24 AM	3		2.00	9	8	0	0	580.95	16	73.1		1
6/7/06	8:40:07 AM	4		2.00	8	8	0	0	514.66	15	80.9		1
6/7/06	8:42:50 AM	5		2.00	7	7	0	0	567.80	13	90.6		1
6/7/06	8:45:32 AM	6		2.00	4	4	1	0	578.19	8	135.3		1
6/7/06	8:48:16 AM	7		2.00	1	0	2	0	545.87	1	812.4		1
6/7/06	8:50:59 AM	8		2.00	4	4	3	4	512.43	7	151.5		1
6/7/06	8:53:42 AM	9		2.00	11	10	0	3	535.92	21	62.4		1
6/7/06	8:56:24 AM	10		2.00	1	0	0	0	612.73	1	812.4		1
6/7/06	8:59:06 AM	11		2.00	7	5	0	0	586.56	12	90.6		1
6/7/06	9:01:48 AM	12		2.00	4	4	0	0	585.99	8	135.3		1
6/7/06	9:04:31 AM	13		2.00	6	4	0	3	610.14	10	103.8		1
6/7/06	9:07:14 AM	14		2.00	5	5	0	0	624.39	8	122.5		1
6/7/06	9:09:56 AM	15		2.00	8	7	0	3	597.71	15	78.3		1
6/7/06	9:12:38 AM	16		2.00	11	9	2	0	574.77	21	60.3		1
6/7/06	9:15:25 AM	17		2.00	6	4	0	0	625.54	11	96.7		1
6/7/06	9:18:08 AM	18		2.00	3	3	4	0	610.80	6	173.0		1
6/7/06	9:20:50 AM	19		2.00	15	13	2	0	569.37	28	48.5		1
6/7/06	9:23:34 AM	20		2.00	4	4	0	0	635.03	7	135.3		1
6/7/06	9:26:18 AM	21		2.00	7	6	0	3	617.94	14	82.4		1
6/7/06	9:29:01 AM	22		2.00	2	1	0	0	605.89	3	317.2		1
6/7/06	9:31:44 AM	23		2.00	4	4	3	0	620.73	7	144.6		1
6/7/06	9:34:28 AM	24		2.00	2	2	0	4	646.44	4	232.7		1
6/7/06	9:37:10 AM	25		2.00	1	1	0	0	640.24	1	741.8		1

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 MT-06-0573

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_159
 Batch Ended: 6/7/06 7:28
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0573 [25] RICHARDSON 6-7-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.20		0.38	1.85	
A2	2	0.00	2.00		0.00	1.17	
A3	3	0.00	2.26		0.00	1.26	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.87		0.00	1.20	
B2	6	0.00	1.89		1.59	1.93	
B3	7	1.91	2.20		0.05	1.88	
B4	8	1.68	1.97		0.45	1.69	
D1	9	1.73	2.07		1.38	2.17	
D2	10	0.00	2.15		0.00	1.20	
D3	11	0.00	2.13		2.74	2.49	
D4	12	0.00	2.05		0.40	1.66	
A1	13	4.12	3.08		0.00	1.31	
A2	14	0.00	2.01		0.36	1.65	
A3	15	0.00	2.28		0.30	1.78	
A4	16	1.90	2.10		0.00	1.21	
B1	17	1.58	1.93		2.41	2.38	
B2	18	0.00	1.87		0.48	1.58	
B3	19	0.00	2.20		0.27	1.88	
B4	20	0.00	1.95		0.00	1.20	
D1	21	0.00	2.05		0.00	1.26	
D2	22	0.00	2.18		1.51	2.07	
D3	23	0.00	2.10		0.26	1.76	
D4	24	3.74	2.88		0.00	1.18	
D1	25	0.00	2.07		1.53	2.17	

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PA 5 of 11
 RLH

T-Building follow up elevated scan SYS02C

RSDS# MT-06-0573 RCT: RCT:

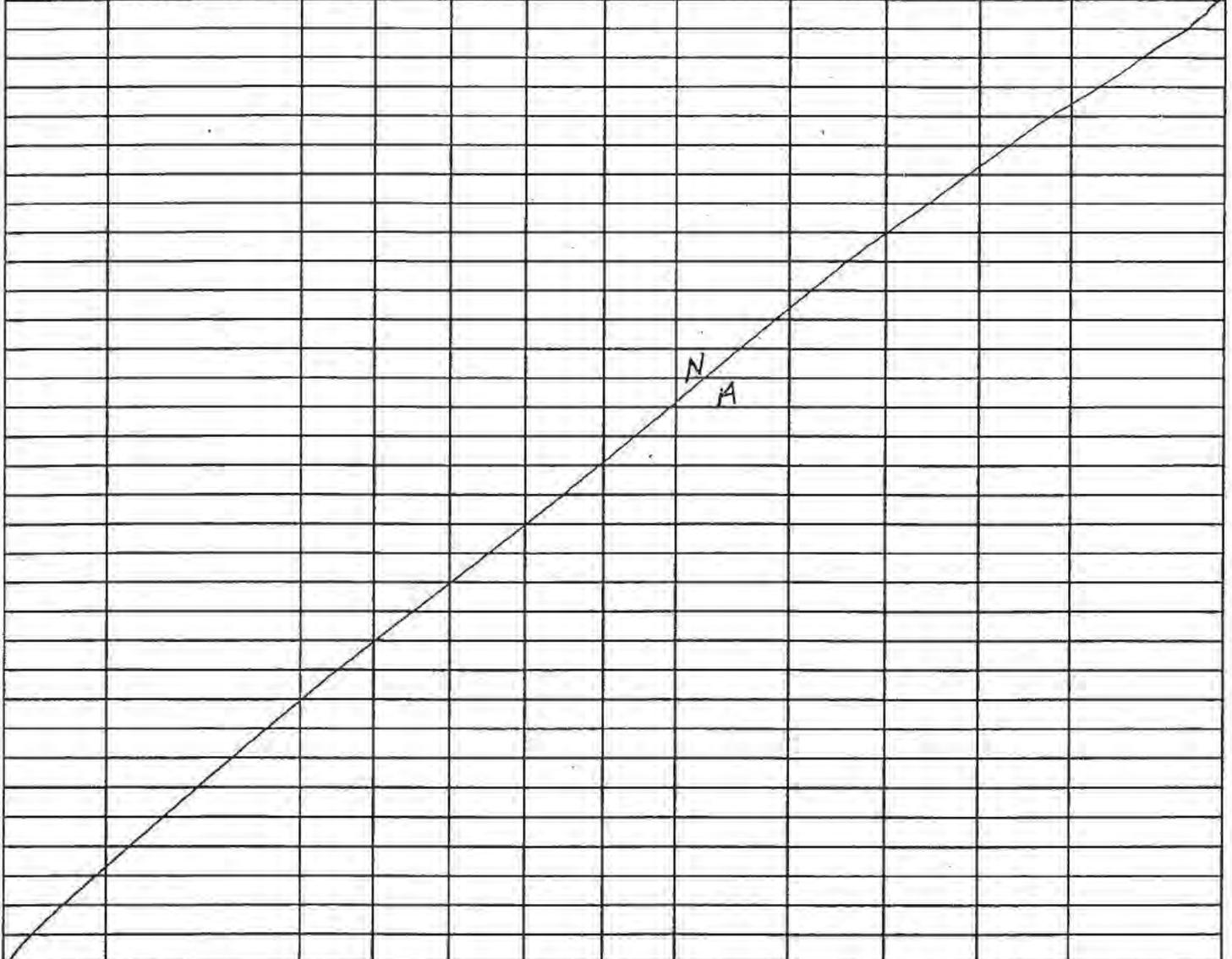
Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02C0101	5920		5929	1	1	6/6/06	7:36	636	120	174
ALPHA	SYS02C0102	5920		5929	1	2	6/6/06	7:46	46	120	144
ALPHA	SYS02C0103	5920		5929	1	3	6/6/06	7:51	38	120	147
ALPHA	SYS02C0104	5920		5929	1	4	6/6/06	7:56	39	120	178
ALPHA	SYS02C0105	5920		5929	1	5	6/6/06	8:03	47	120	110
ALPHA	SYS02C0106	5920		5929	1	6	6/6/06	8:09	29	120	159
ALPHA	SYS02C0107	5920		5929	1	7	6/6/06	8:15	42	120	132
ALPHA	SYS02C0108	5920		5929	1	8	6/6/06	8:20	35	120	155
ALPHA	SYS02C0109	5920		5929	1	9	6/6/06	9:46	41	120	144
ALPHA	SYS02C0110	5920		5929	1	10	6/6/06	9:52	38	120	178
ALPHA	SYS02C0111	5920		5929	1	11	6/6/06	9:56	47	120	178
ALPHA	SYS02C0112	5920		5929	1	12	6/6/06	10:02	47	120	136
ALPHA	SYS02C0113	5920		5929	1	13	6/6/06	10:07	36	120	1497
ALPHA	SYS02C0114	5920		5929	1	14	6/6/06	10:16	396	120	146
ALPHA	SYS02C0115	5920		5929	1	15	6/6/06	10:22	118	120	166
ALPHA	SYS02C0116	5920		5929	1	16	6/6/06	10:28	44	120	125
ALPHA	SYS02C0117	5920		5929	1	17	6/6/06	12:40	33	120	337
ALPHA	SYS02C0118	5920		5929	1	18	6/6/06	12:48	142	120	163
ALPHA	SYS02C0119	5920		5929	1	19	6/6/06	12:57	43	120	117
ALPHA	SYS02C0120	5920		5929	1	20	6/6/06	13:02	31	120	174
ALPHA	SYS02C0121	5920		5929	1	21	6/6/06	13:29	46	120	280
ALPHA	SYS02C0122	5920		5929	1	22	6/6/06	15:11	74	120	125
ALPHA	SYS02C0123	5920		5929	1	23	6/6/06	15:20	33	120	159
ALPHA	SYS02C0124	5920		5929	1	24	6/6/06	15:27	42	120	102
ALPHA	SYS02C0125	5920		5929	1	25	6/6/06	16:17	27	120	1796
BETA	SYS02C0101	5920		5929	2	1	6/6/06	7:37	181	60	1300
BETA	SYS02C0102	5920		5929	2	2	6/6/06	7:47	131	60	1716
BETA	SYS02C0103	5920		5929	2	3	6/6/06	7:52	173	60	1597
BETA	SYS02C0104	5920		5929	2	4	6/6/06	7:58	161	60	2867
BETA	SYS02C0105	5920		5929	2	5	6/6/06	8:05	289	60	1885
BETA	SYS02C0106	5920		5929	2	6	6/6/06	8:10	190	60	1478
BETA	SYS02C0107	5920		5929	2	7	6/6/06	8:16	149	60	1478
BETA	SYS02C0108	5920		5929	2	8	6/6/06	8:21	149	60	1240
BETA	SYS02C0109	5920		5929	2	9	6/6/06	9:47	125	60	1349
BETA	SYS02C0110	5920		5929	2	10	6/6/06	9:53	136	60	1389
BETA	SYS02C0111	5920		5929	2	11	6/6/06	9:57	140	60	1488
BETA	SYS02C0112	5920		5929	2	12	6/6/06	10:03	150	60	1250
BETA	SYS02C0113	5920		5929	2	13	6/6/06	10:08	126	60	1587
BETA	SYS02C0114	5920		5929	2	14	6/6/06	10:17	160	60	1895
BETA	SYS02C0115	5920		5929	2	15	6/6/06	10:23	191	60	1806
BETA	SYS02C0116	5920		5929	2	16	6/6/06	10:29	182	60	1657
BETA	SYS02C0117	5920		5929	2	17	6/6/06	12:41	167	60	

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Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector # :	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector # :	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector # :	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector # :	4

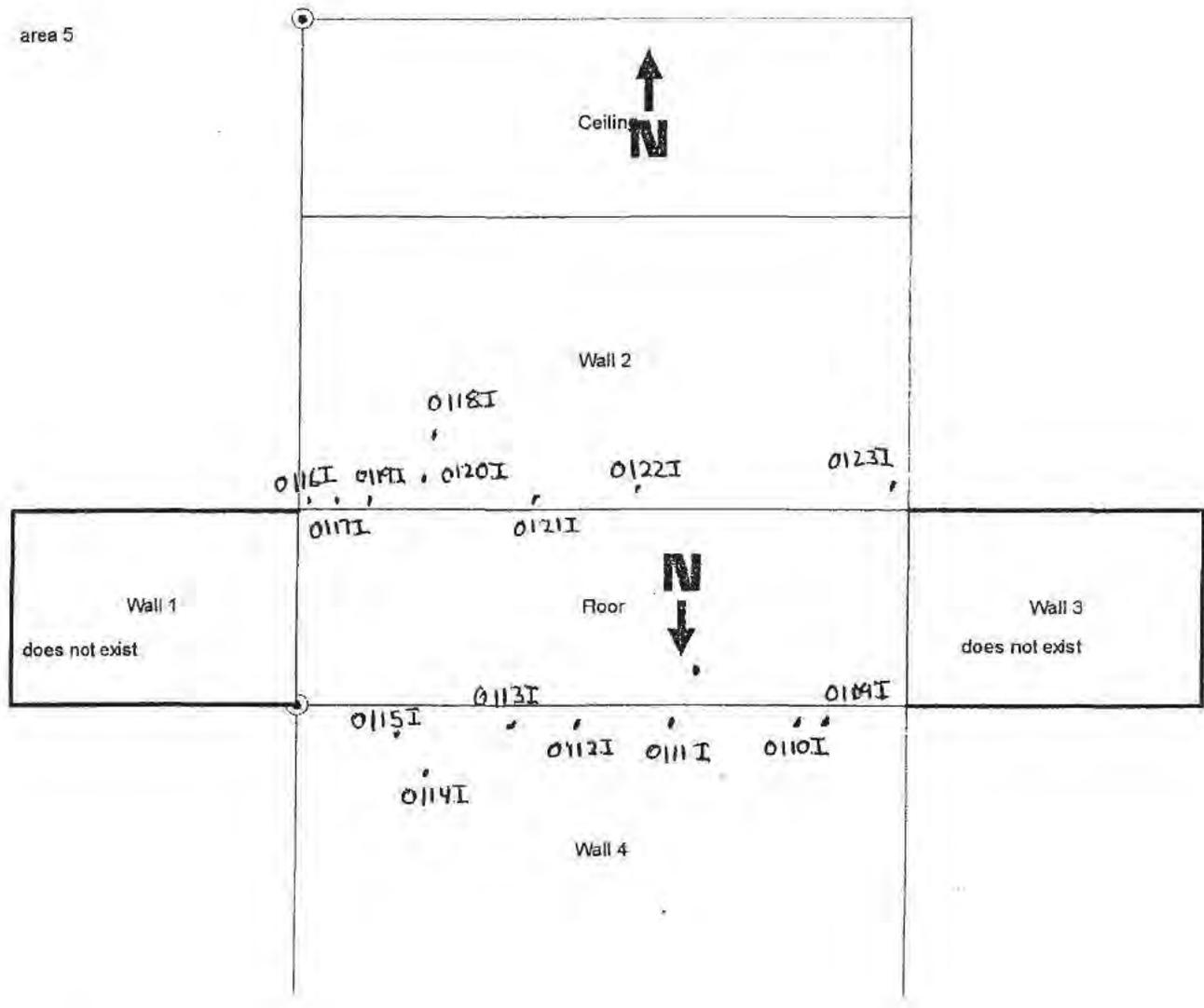
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
BETA	SYS02C0118 I	5920		5929	2	18	6/6/06	12:50	142	60	1409
BETA	SYS02C0119 I	5920		5929	2	19	6/6/06	12:59	185	60	1835
BETA	SYS02C0120	5920		5929	2	20	6/6/06	13:04	123	60	1220
BETA	SYS02C0121	5920		5929	2	21	6/6/06	13:30	144	60	1429
BETA	SYS02C0122	5920		5929	2	22	6/6/06	15:13	185	60	1835
BETA	SYS02C0123	5920		5929	2	23	6/6/06	15:21	181	60	1796
BETA	SYS02C0124	5920		5929	2	24	6/6/06	15:29	196	60	1944
BETA	SYS02C0125 I	5920		5929	2	25	6/6/06	16:19	178	60	1766 ✓



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MT-06-0573

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 ~~Scan 100% of floor and walls < 2 meters~~ 6/24/06
~~Scan 25% of floor above 2 meters~~ 6/24/06

area 5



COPY

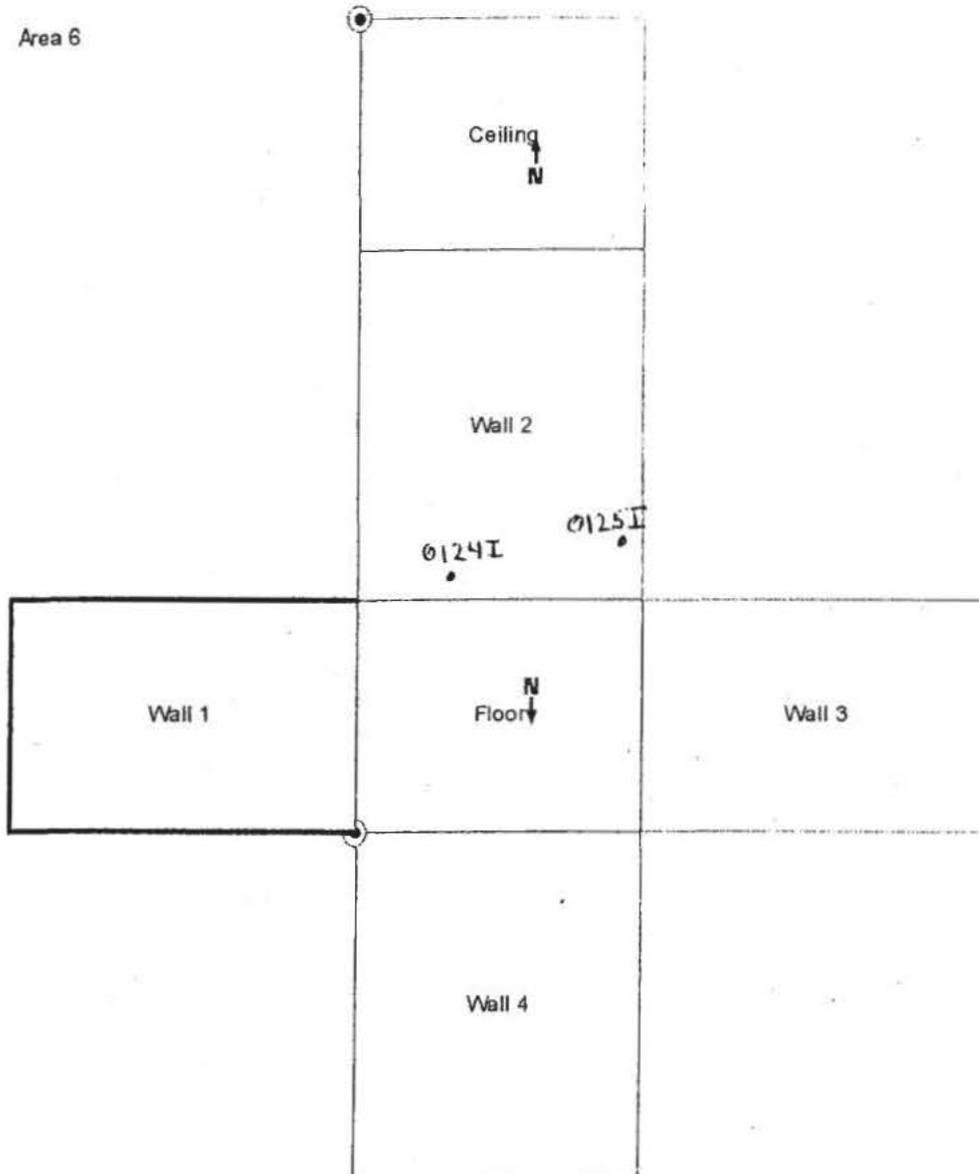
F292/355

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft

Class 1 ~~Scan 100% of floor and accessible walls < 2 meters~~ 6/20/06 Jm

~~Scan 25% of faccessible walls above 2 meters~~ 6/20/06 Jm

Area 6

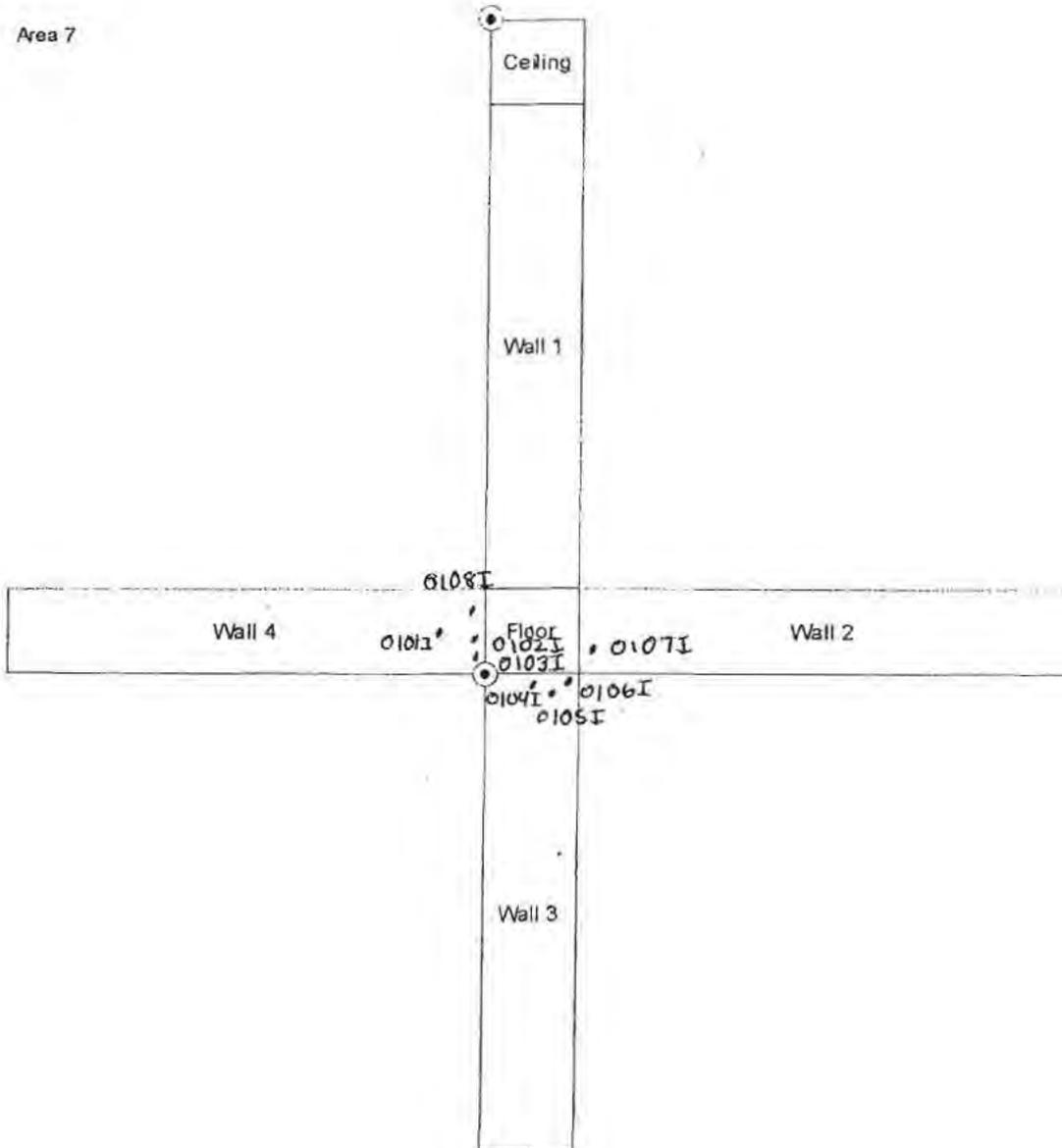


COPY

F293/353

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 ~~Scan 100% of floor and accessible walls < 2 meters~~ 6/21/06
~~Scan 100% of wall #3, (North wall)~~ 6/21/06
~~Scan 25% of accessible walls above 2 meters~~ 6/21/06

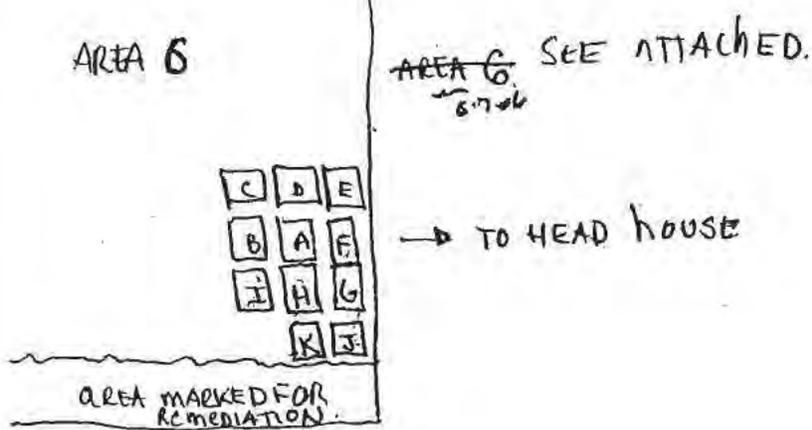
Area 7



RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T 606 99 crawlspace Head house	SURVEY NO. MT-06-0574
PURPOSE: follow up elevated INVESTIGATION SY502C	RWP NO. N/A
	DATE: 6.7.06
	TIME: 1430

MAP / DRAWING



NOTE: INVESTIGATION WAS STOPPED AFTER 11 READINGS DUE TO THE FACT THAT BORDERING AREA ALONG THE BOTTOM BORDER WAS IMPOSSIBLE DUE TO AREA BELOW THAT WAS ALREADY TO BE REMEDIATED.

Reference RSDS # MT-06-0573 for location 0125.

Reference RSDS # MT-06-0577 for post remediation survey

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr (β+γ) extremity on contact
K = factor of 1000
- - - - = radiological boundary

COPY

△ # = mrem/hr neutron # = swipe number
= air sample number #/α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5923 / 5925	5 / 21 / 07
N/A		

Completed by: (Signature) <i>[Signature]</i>	Date: 6.7.06
Completed by: (Print Name) S. Hodgers	
Counted by: (Signature) SEE ATTACHED	HP# N/A Date: N/A
Counted by: (Print Name) shrets	F295/353
Reviewed/Approved by: (Signature) <i>[Signature]</i>	Date: 6/20/06
Reviewed/Approved by: (Print Name) Jerry Taylor	

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RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
1	SEE ATTACHED			01258 Fin
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
N/A				

COMMENTS:

N/A

COPY

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. (If not needed, mark N/A.)

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_2\20060607_1410.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0574.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				

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3

pg 3 of 8
[Signature]

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/7/06	2:11:30 PM	-1	10.00		9	9	11	2	612.60	0	20.6	B	2
6/7/06	2:22:20 PM	0	2.00		39	37	0	2	538.62	76	25.7		2
6/7/06	2:25:04 PM	✓1	2.00		12	10	0	12	552.37	23	56.7		2

↙

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F 298/353

PA 40F8
MT-06.0574

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_160
Batch Ended: 6/7/06 13:32
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0574 [1] RICHARDSON 6-7-06 RLH

Detector ID	Sample ID
B1	1

Alpha Activity		
DPM	σ	flags
0.00	1.87	

Beta Activity		
DPM	σ	flags
0.00	1.20	

COPY

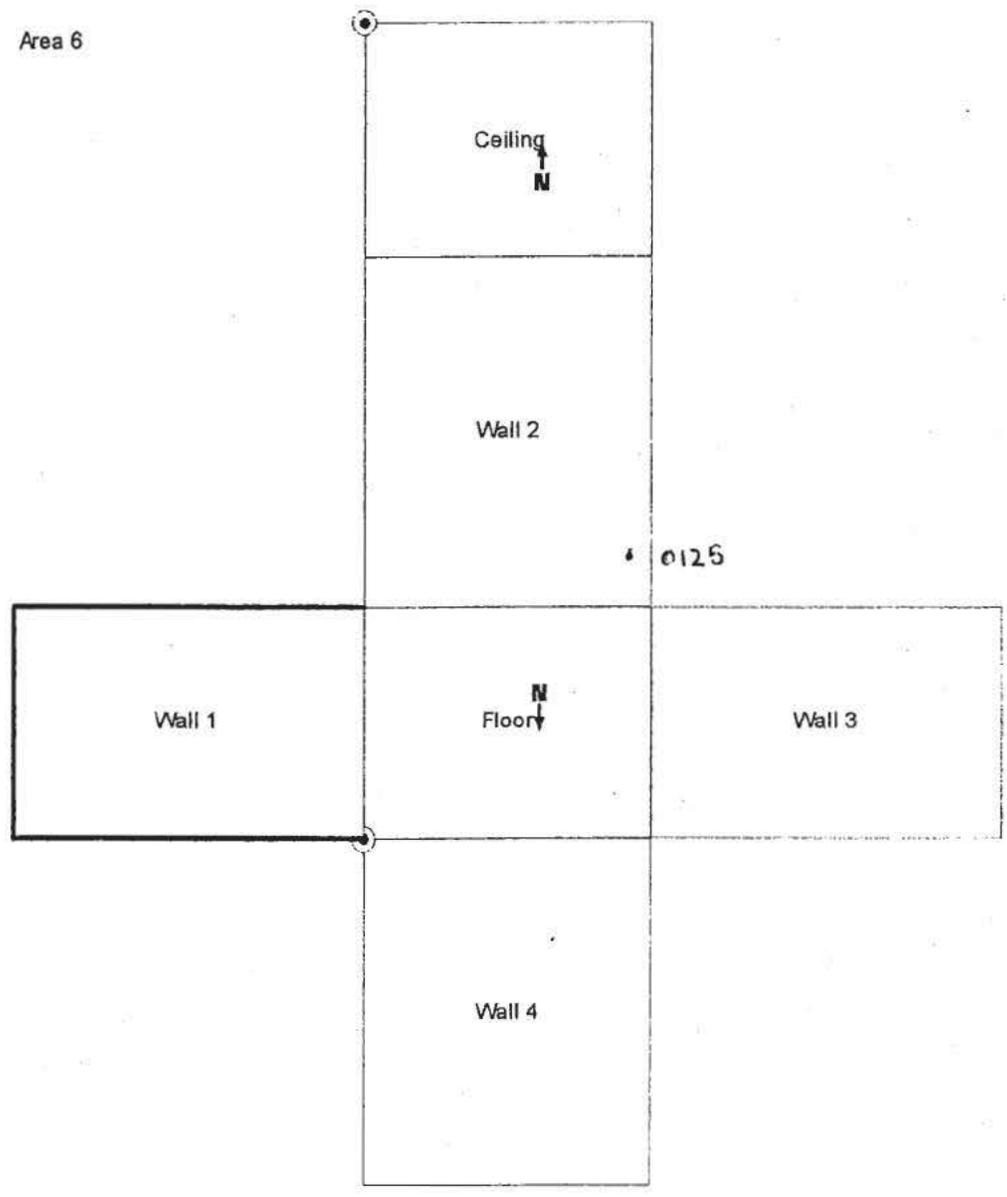
F 299/353

pg 5 of 8

RL

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 ~~Scan 100% of floor and accessible walls < 2 meters~~ 6/26/06
~~Scan 25% of faceessible walls above 2 meters~~ 6/26/06

Area 6



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F308/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG / AREA / ROOM)	T. BLDG 99 CRAWLSPACE	SURVEY NO.	MT-06-0577
PURPOSE:	Follow up post Remediation Syso2c	RWP NO.	N/A
		DATE:	6/9/06
		TIME:	1600

MAP / DRAWING

SEE ATTACHED.

SCANNED AREAS
AROUND SURVEY POINTS
w/ NO ELEVATED
AREAS RECORDED.

Reference RSDS# MT-06-0573
for ORIGINAL (Pre-Remediation)

SURVEY VALUES ~~0.011-0.125~~ ¹²⁵ ~~0.011-0.125~~ _{6/21/06}

COPY

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr ($\beta + \gamma$) extremity on contact
K = factor of 1000
----- = radiological boundary

\triangle # = mrem/hr neutron # (circle) = swipe number
(square) = air sample number #/alpha (circle) or #/beta = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5923 5925	5/21/07
	N/A	

Completed by: (Signature)	[Signature]	Date:	6/9/06
Completed by: (Print Name)	J. Hollibaugh		
Counted by: (Signature)	[Signature]	HP#	N/A
Counted by: (Print Name)	Jerry Taylor	Date:	N/A
Reviewed/Approved by: (Signature)	[Signature]	Date:	6-26-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

(HP)

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060612_1145.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0577.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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F305/353

pg 3 of 10
RLH

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/12/06	11:46:08 AM	-1		10.00	9	9	11	11	607.11	0	21.0	B	1
6/12/06	11:56:58 AM	0		2.00	261	251	5	0	536.00	510	8.9		1
6/12/06	11:59:41 AM	1		2.00	0	0	0	0	606.92	0	0.0		1
6/12/06	12:02:25 PM	2		2.00	3	3	0	0	627.02	6	165.1		1
6/12/06	12:05:08 PM	3		2.00	1	1	3	0	635.13	2	532.7		1
6/12/06	12:07:50 PM	4		2.00	0	0	0	0	635.21	0	0.0		1
6/12/06	12:10:34 PM	5		2.00	0	0	1	0	620.44	0	0.0		1
6/12/06	12:13:18 PM	6		2.00	2	1	0	0	633.84	3	264.7		1
6/12/06	12:16:01 PM	7		2.00	0	0	0	0	636.29	0	0.0		1
6/12/06	12:18:44 PM	8		2.00	0	0	0	0	644.32	0	0.0		1
6/12/06	12:21:26 PM	9		2.00	3	3	2	0	628.88	6	171.4		1
6/12/06	12:24:09 PM	10		2.00	2	1	0	0	614.16	4	254.0		1
6/12/06	12:26:52 PM	11		2.00	1	1	0	0	635.29	2	565.3		1
6/12/06	12:29:34 PM	12		2.00	0	0	0	0	655.67	0	0.0		1
6/12/06	12:32:17 PM	13		2.00	0	0	0	0	646.10	0	0.0		1
6/12/06	12:34:59 PM	14		2.00	0	0	5	0	640.02	0	0.0		1
6/12/06	12:37:42 PM	15		2.00	0	0	0	0	639.32	0	0.0		1
6/12/06	12:40:24 PM	16		2.00	0	0	0	0	626.22	0	0.0		1
6/12/06	12:43:13 PM	17		2.00	0	0	0	0	630.16	0	0.0		1
6/12/06	12:45:55 PM	18		2.00	0	0	1	0	631.16	0	0.0		1
6/12/06	12:48:38 PM	19		2.00	0	0	0	0	626.29	1	1153.1		1
6/12/06	12:51:20 PM	20		2.00	0	0	2	0	648.00	0	0.0		1
6/12/06	12:54:03 PM	21		2.00	0	0	0	0	640.51	0	0.0		1
6/12/06	12:56:45 PM	22		2.00	0	1	0	0	628.76	0	1907.1		1
6/12/06	12:59:28 PM	23		2.00	0	0	1	0	637.38	0	0.0		1
6/12/06	1:02:11 PM	24		2.00	0	0	0	0	613.76	0	0.0		1
6/12/06	1:04:53 PM	25		2.00	0	0	0	0	624.85	1	1153.1		1

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7

Pg 4 of 10
MT-06-0577

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_161
 Batch Ended: 6/12/06 10:56
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0577 [25] RICHARDSON 6-12-06 RLH ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DFM	σ	flags	DFM	σ	flags
A1	1	0.00	2.18		0.00	1.31	
A2	2	1.79	2.02		0.20	1.65	
A3	3	0.00	2.26		0.00	1.26	
A4	4	0.00	2.13		1.78	2.09	
B1	5	0.00	1.87		0.00	1.20	
B2	6	1.69	1.87		0.28	1.58	
B3	7	0.00	2.20		0.27	1.88	
B4	8	0.00	2.01		3.04	2.39	
C1	9	0.00	2.09		1.11	2.18	
C2	10	0.00	1.93		0.00	1.16	
C3	11	0.00	2.16		2.97	2.53	
C4	12	0.00	1.99		0.45	1.61	
D1	13	0.00	2.06		0.28	1.77	
D2	14	0.00	2.18		1.51	2.07	
D3	15	1.68	2.10		0.10	1.76	
D4	16	1.71	2.04		0.00	1.18	
B1	17	0.00	1.93		2.62	2.38	
B2	18	0.00	1.85		0.00	1.12	
B3	19	0.00	2.18		0.00	1.33	
B4	20	0.00	1.97		0.66	1.69	
C1	21	0.00	2.07		0.00	1.27	
C2	22	0.00	1.94		0.48	1.63	
C3	23	0.00	2.12		0.00	1.27	
C4	24	0.00	2.00		1.58	1.97	
D1	✓ 25	0.00	2.07		1.53	2.17	

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Pg 50 FID
 RLH

F307/353

T-Building Characterization Background Survey

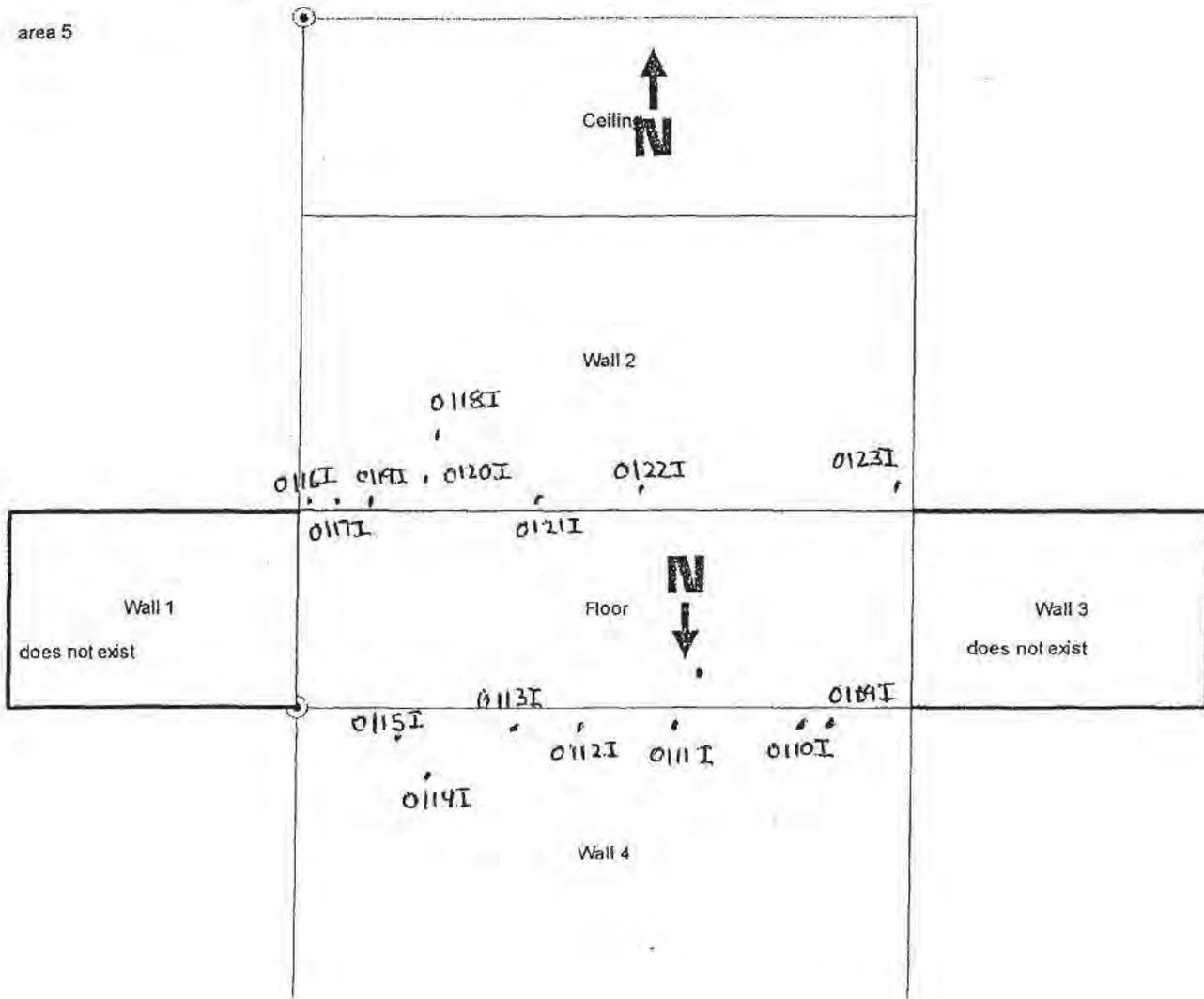
RSDS# MT-06-0577 RCT: RCT:

Alpha	43-68 BKG:	0	EFF:	0.206	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.163	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02C0101	5923		5925	1	1	6/9/2006	13:36	7	120	27
ALPHA	SYS02C0102	5923		5925	1	2	6/9/2006	13:40	11	120	42
ALPHA	SYS02C0103	5923		5925	1	3	6/9/2006	13:43	16	120	62
ALPHA	SYS02C0104	5923		5925	1	4	6/9/2006	13:47	15	120	58
ALPHA	SYS02C0105	5923		5925	1	5	6/9/2006	13:50	10	120	39
ALPHA	SYS02C0106	5923		5925	1	6	6/9/2006	13:54	4	120	15
ALPHA	SYS02C0107	5923		5925	1	7	6/9/2006	13:57	9	120	35
ALPHA	SYS02C0108	5923		5925	1	8	6/9/2006	14:01	5	120	19
ALPHA	SYS02C0109	5923		5925	1	9	6/9/2006	14:05	10	120	39
ALPHA	SYS02C0110	5923		5925	1	10	6/9/2006	14:08	7	120	27
ALPHA	SYS02C0111	5923		5925	1	11	6/9/2006	14:12	13	120	50
ALPHA	SYS02C0112	5923		5925	1	12	6/9/2006	14:15	14	120	54
ALPHA	SYS02C0113	5923		5925	1	13	6/9/2006	14:19	10	120	39
ALPHA	SYS02C0114	5923		5925	1	14	6/9/2006	14:22	23	120	89
ALPHA	SYS02C0115	5923		5925	1	15	6/9/2006	14:26	17	120	65
ALPHA	SYS02C0116	5923		5925	1	16	6/9/2006	14:29	15	120	58
ALPHA	SYS02C0117	5923		5925	1	17	6/9/2006	14:33	12	120	46
ALPHA	SYS02C0118	5923		5925	1	18	6/9/2006	14:37	8	120	31
ALPHA	SYS02C0119	5923		5925	1	19	6/9/2006	14:40	18	120	69
ALPHA	SYS02C0120	5923		5925	1	20	6/9/2006	14:44	13	120	50
ALPHA	SYS02C0121	5923		5925	1	21	6/9/2006	14:47	19	120	73
ALPHA	SYS02C0122	5923		5925	1	22	6/9/2006	14:51	18	120	69
ALPHA	SYS02C0123	5923		5925	1	23	6/9/2006	14:54	16	120	62
ALPHA	SYS02C0124	5923		5925	1	24	6/9/2006	14:58	17	120	65
ALPHA	SYS02C0125	5923		5925	1	25	6/9/2006	15:01	11	120	42
BETA	SYS02C0101	5923		5925	2	1	6/9/2006	13:37	110	60	1071
BETA	SYS02C0102	5923		5925	2	2	6/9/2006	13:41	117	60	1139
BETA	SYS02C0103	5923		5925	2	3	6/9/2006	13:45	126	60	1227
BETA	SYS02C0104	5923		5925	2	4	6/9/2006	13:48	136	60	1324
BETA	SYS02C0105	5923		5925	2	5	6/9/2006	13:52	155	60	1509
BETA	SYS02C0106	5923		5925	2	6	6/9/2006	13:55	111	60	1081
BETA	SYS02C0107	5923		5925	2	7	6/9/2006	13:58	145	60	1412
BETA	SYS02C0108	5923		5925	2	8	6/9/2006	14:02	138	60	1344
BETA	SYS02C0109	5923		5925	2	9	6/9/2006	14:06	96	60	935
BETA	SYS02C0110	5923		5925	2	10	6/9/2006	14:09	109	60	1061
BETA	SYS02C0111	5923		5925	2	11	6/9/2006	14:13	121	60	1178
BETA	SYS02C0112	5923		5925	2	12	6/9/2006	14:16	127	60	1237
BETA	SYS02C0113	5923		5925	2	13	6/9/2006	14:20	119	60	1159
BETA	SYS02C0114	5923		5925	2	14	6/9/2006	14:23	109	60	1061
BETA	SYS02C0115	5923		5925	2	15	6/9/2006	14:27	156	60	1519
BETA	SYS02C0116	5923		5925	2	16	6/9/2006	14:31	144	60	1402
BETA	SYS02C0117	5923		5925	2	17	6/9/2006	14:34	125	60	1217
BETA	SYS02C0118	5923		5925	2	18	6/9/2006	14:38	137	60	1334

pg 8 of 10
MT-06-0573
0577

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 ~~Scan 100% of floor and walls < 2 meters~~ 6/24/06
~~Scan 25% of floor above 2 meters~~ 6/24/06

area 5

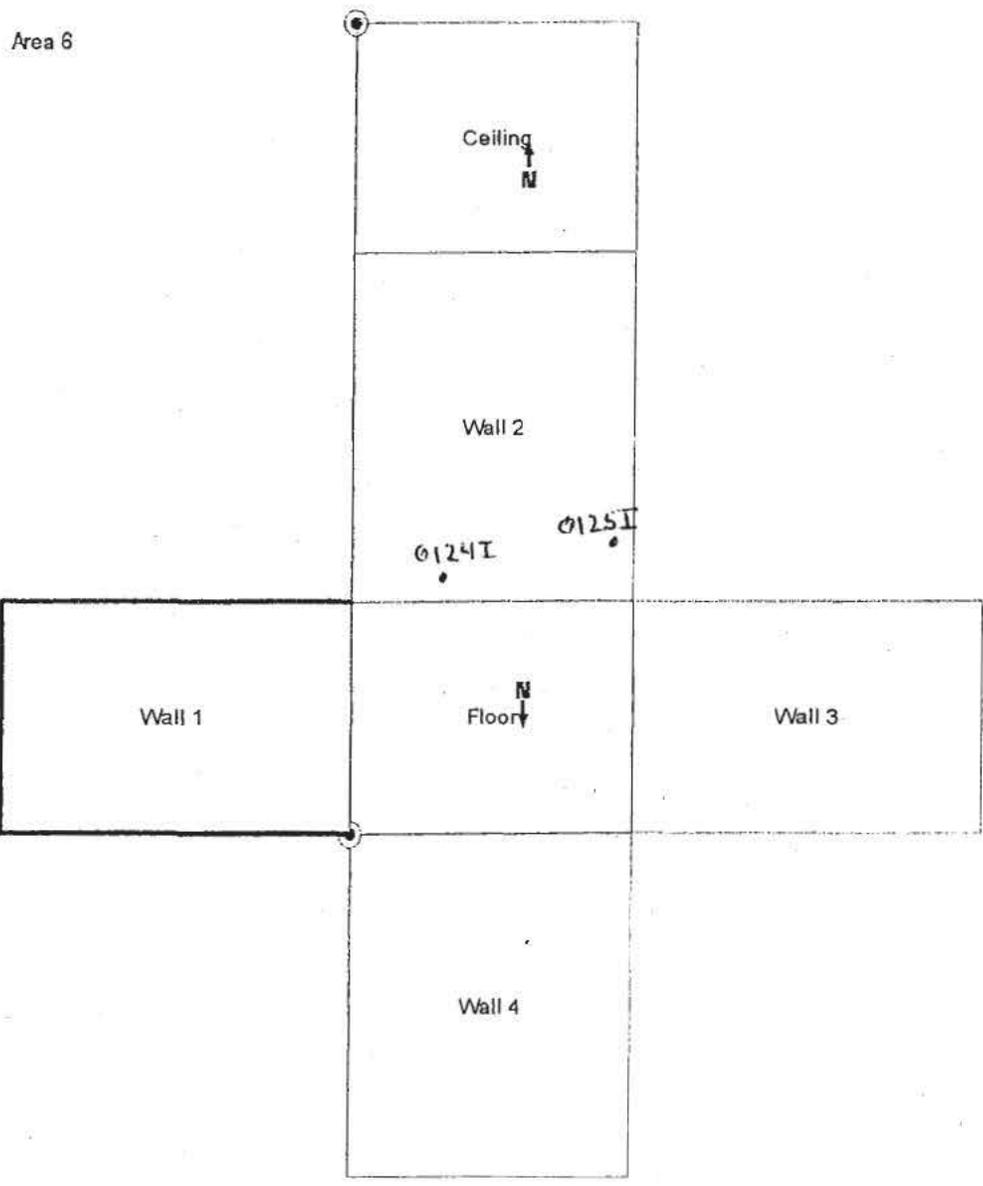


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F310/353

7
PPTO OF ID
MT-06-0573
0577

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 ~~Scan 100% of floor and accessible walls < 2 meters~~ 6/26/06
~~Scan 25% of faceable walls above 2 meters~~ 6/26/06



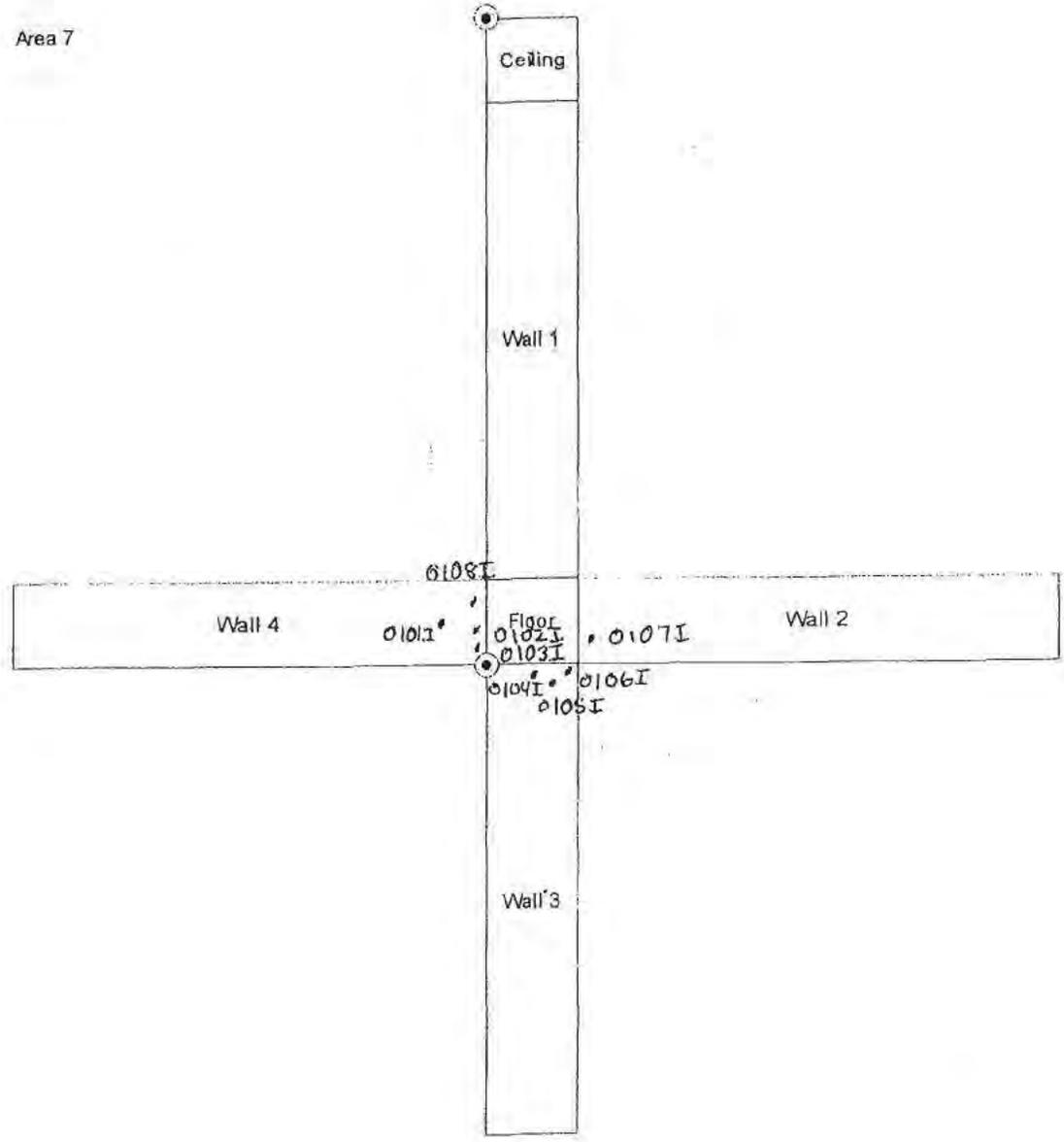
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F311/353

pg 100F 10
mt-06-0573
0577

SYS-02C T99 through brickwall to East part of the West Headhouse airshaft
Class 1 ~~Scan 100% of floor and accessible walls < 2 meters 6/26/06 Jm~~
~~Scan 100% of wall #3, (North wall) 6/26/06 Jm~~
~~Scan 25% of accessible walls above 2 meters 6/26/06 Jm~~

Area 7



COPY

312/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG / AREA / ROOM)	T Bldg T99 crawlspace	SURVEY NO.	MT-06-0579
PURPOSE:	MARSSIM Drains, Vents & Utilities SXS02C	RWP NO.	NA
		DATE:	6-13-06
		TIME:	1000

MAP / DRAWING

SCANNED 1m² around all SURVEY POINTS ON VENTS.
NO UTILITIES LOCATED IN THIS UNIT

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr ($\beta + \gamma$) extremity on contact
K = factor of 1000
----- = radiological boundary

COPY

△ # = mrem/hr neutron ⊙ # = swipe number
□ # = air sample number ⊙ #/α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L2350	5922/5926	5-21-07 ✓
NA		

Completed by: (Signature)	<i>[Signature]</i>	Date:	6-13-06
Completed by: (Print Name)	George S. Hedges / Stephen Richardson		
Counted by: (Signature)	see	HP#	Date:
Counted by: (Print Name)	attached		
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Kevin F. [Signature]		

F 212/353 10/27

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
1	see attached sheet			0101V
2	↓	↓	↓	0102V
3	↓	↓	↓	0103V
4	↓	↓	↓	0101D
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
N/A				

COMMENTS:

N/A

COPY

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801 ⁶⁻¹⁴⁻⁰⁶

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060614_0912.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0579.001 ^{CH}
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time
A

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3/15/2003

3-15-03

Protocol# 1 - MARSSIM_Smear_1.lsa

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/14/06	9:13:16 AM	-1		10.00	10	10	11	8	606.33	0	19.6	B	1
6/14/06	9:24:06 AM	0		2.00	256	242	4	0	535.59	500	9.0		1
6/14/06	9:26:50 AM	1		2.00	2	1	0	4	637.85	3	333.5		1
6/14/06	9:29:33 AM	2		2.00	0	1	0	5	602.06	0	5507.2		1
6/14/06	9:32:16 AM	3		2.00	0	0	0	6	587.89	0	0.0		1
6/14/06	9:35:01 AM	4		2.00	0	0	0	6	615.24	0	0.0		1

GM

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F-316/353

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Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_163
Batch Ended: 6/14/06 8:31
Cal. Due Date: 11/17/06
Serial Number: 26966-3

GM

Batch ID: MT-06-0579 [4] HODGES 6-14-06 RLH

Detector ID	Sample ID
B1	1
B2	2
B3	3
B4	4

Alpha Activity		
DPM	σ	flags
1.58	1.87	
1.69	1.87	
0.00	2.28	
0.00	1.97	

GM

Beta Activity		
DPM	σ	flags
0.00	1.20	
0.28	1.58	
5.56	3.26	
0.66	1.69	

GM

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F217/353

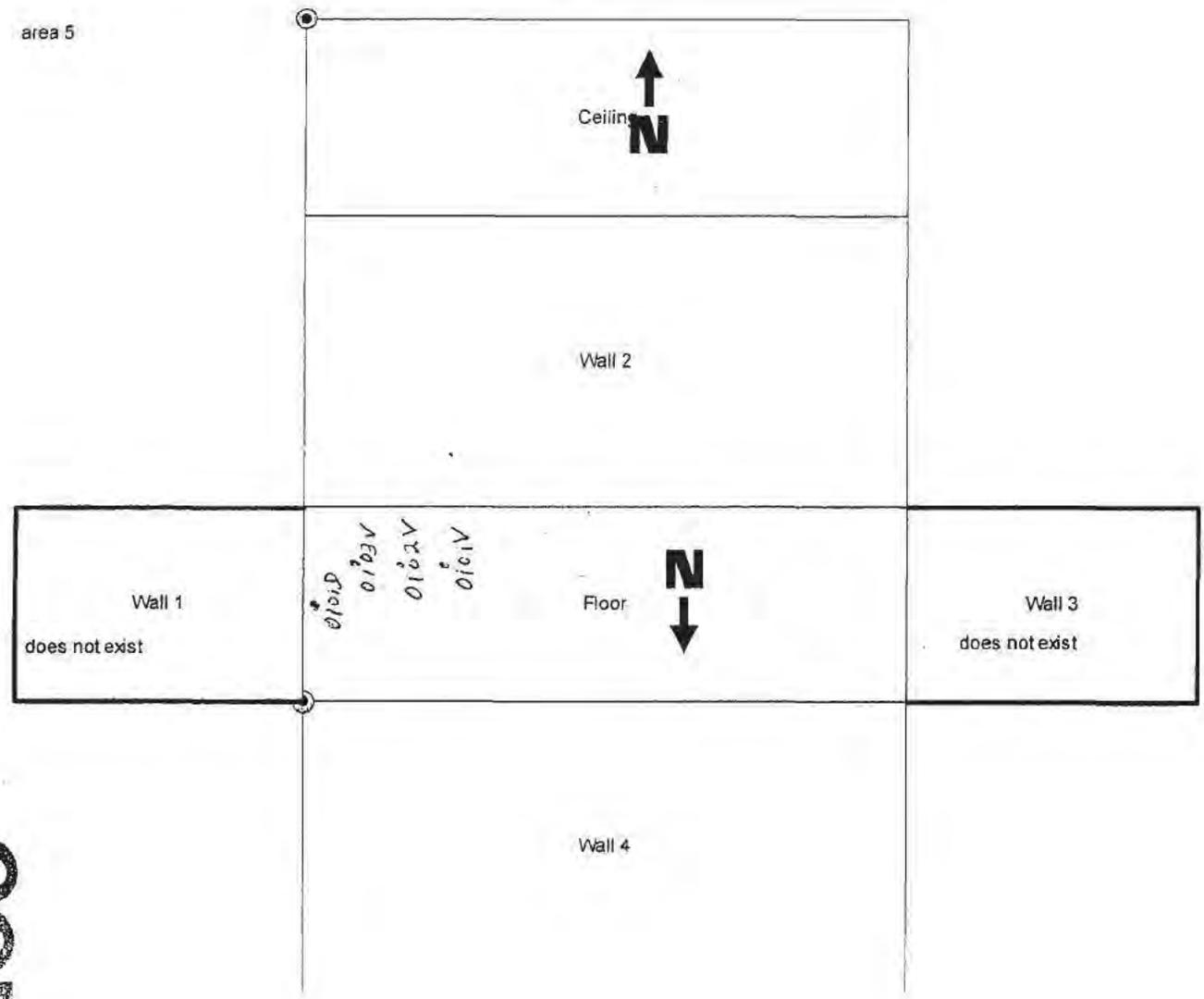
GM 6-14-06
Page 1 of 1

*5 of 5
RLH*

MT-06-0579

SYS-02C Drains, vents, and utilities
Class 1

area 5



F320/351

COPY

8 of 8

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>TBLDG West Head House</u>	SURVEY NO. <u>MT-06-0580</u>
PURPOSE: <u>Lower station in area 5,6 & 7</u>	RWP NO. <u>N/A</u>
<u>SY502C</u>	DATE: <u>6/14/06</u>
	TIME: <u>0720</u>

MAP / DRAWING

See attached map

LEGEND: # = mrem/hr (γ) whole body
 #E = mrem/hr ($\beta + \gamma$) extremity on contact
 K = factor of 1000
 - - - - = radiological boundary

COPY

= mrem/hr neutron = swipe number

= air sample number or β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<u>2350</u>	<u>5920/5929</u>	<u>11/15/06</u>
 	 	
 	 	
 	 	

Completed by: (Signature) <u>Wayne Jones</u>	Date: <u>6/14/06</u>
Completed by: (Print Name) <u>Wayne Jones / Scott Hollars</u>	
Counted by: (Signature) <u>see attached</u>	HP#
Counted by: (Print Name) <u> </u>	
Reviewed/Approved by: (Signature) <u>Wayne Jones</u>	Date: <u>6-19-06</u>
Reviewed/Approved by: (Print Name) <u>Ronald R. Daily</u>	<u>F-321/353</u>

RD

0103 Ed
0850-90-LW

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_165
Batch Ended: 6/14/06 15:04
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0580 [20] W. JONES 6-14-06 RLH

COPY

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flag	DPM	σ	flag
A1	1	0.00	2.18		0.00	1.32	
A2	2	0.00	2.03		1.52	2.02	
A3	3	0.00	2.28		0.30	1.78	
A4	4	0.00	2.10		0.00	1.21	
B1	5	1.58	1.87		0.00	1.20	
B2	6	0.00	1.85		0.00	1.12	
B3	7	1.91	2.22		1.37	2.30	
B4	8	0.00	2.01		3.04	2.39	
C1	9	0.00	2.09		1.11	2.18	
C2	10	0.00	1.93		0.00	1.16	
C3	11	0.00	2.14		0.45	1.79	
C4	12	0.00	2.04		4.97	2.78	
D1	13	0.00	2.05		0.00	1.26	
D2	14	0.00	2.17		0.32	1.69	
D3	15	0.00	2.10		0.26	1.76	
D4	16	0.00	2.04		0.00	1.18	
C1	17	0.00	2.12		3.62	2.82	
C2	18	1.61	1.97		2.62	2.30	
C3	19	0.00	2.15		1.71	2.19	
C4	20	1.64	2.03		3.69	2.54	

wj

wj

F 303/353

Page 1 of 1 wj
6/15/06

RLH

Wg 6/15/06

6/14/06 7:52:03 PM

QuantaSmart (TM) - 1.31 - Serial# 423022

Protocol# 4 - MARSSIM_Smear_4.lsa

MARSSIM Smear Data

COPY

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_4\20060614_1843.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0580_001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_4.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

MT-06-0580
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F3011/353

Rut

M7-06-0580 p3 5810

MARSSIM Smear Data

COPY

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
6/14/06	6:44:13 PM	-1		10.00	8	7	11	13	622.25	0	22.5	B	4
6/14/06	6:55:04 PM	0		2.00	112	106	0	1	537.39	218	13.9		4
6/14/06	6:57:47 PM	1		2.00	0	0	0	10	579.18	0	0.0		4
6/14/06	7:00:30 PM	2		2.00	6	6	0	0	548.48	12	91.5		4
6/14/06	7:03:13 PM	3		2.00	2	3	0	0	565.05	4	254.2		4
6/14/06	7:05:55 PM	4		2.00	8	8	1	0	557.89	16	72.1		4
6/14/06	7:08:39 PM	5		2.00	5	5	0	0	606.21	8	115.1		4
6/14/06	7:11:22 PM	6		2.00	3	2	0	0	586.54	5	188.3		4
6/14/06	7:14:05 PM	7		2.00	1	2	0	0	565.52	3	337.3		4
6/14/06	7:16:47 PM	8		2.00	4	4	2	4	583.81	8	126.8		4
6/14/06	7:19:30 PM	9		2.00	6	6	0	0	593.89	12	88.5		4
6/14/06	7:22:14 PM	10		2.00	5	5	0	0	555.35	9	113.0		4
6/14/06	7:24:57 PM	11		2.00	0	0	3	7	623.64	0	0.0		4
6/14/06	7:27:40 PM	12		2.00	7	7	0	0	547.94	13	86.0		4
6/14/06	7:30:24 PM	13		2.00	0	0	0	7	522.49	0	0.0		4
6/14/06	7:33:08 PM	14		2.00	0	1	0	6	522.59	0	2702.1		4
6/14/06	7:35:51 PM	15		2.00	2	2	0	0	526.39	4	228.0		4
6/14/06	7:38:35 PM	16		2.00	0	1	0	0	538.71	0	1733.6		4
6/14/06	7:41:24 PM	17		2.00	0	0	2	0	448.15	0	0.0		4
6/14/06	7:44:07 PM	18		2.00	11	10	0	3	476.47	22	59.7		4
6/14/06	7:46:50 PM	19		2.00	0	0	4	0	525.27	0	3975.2		4
6/14/06	7:49:34 PM	20		2.00	7	6	0	3	537.15	13	85.8		4

WJ

F 325/353

SYS-02C -01

lower static measurement locations

Area: area 5				
Label	Type	Surface	LX	LY
SYS-2C-01-1	Systematic	Floor	4	7
SYS-2C-01-2	Systematic	Floor	12	7
SYS-2C-01-3	Systematic	Floor	20	7
SYS-2C-01-4	Systematic	Wall 4	22	6
SYS-2C-01-5	Systematic	Wall 4	14	6
SYS-2C-01-6	Systematic	Wall 4	6	6
SYS-2C-01-7	Systematic	Wall 2	23	6
SYS-2C-01-8	Systematic	Wall 2	16	6
SYS-2C-01-9	Systematic	Wall 2	8	6

Area: Area 6				
Label	Type	Surface	LX	LY
SYS-2C-01-10	Systematic	Floor	3	7
SYS-2C-01-11	Systematic	Wall 4	4	1
SYS-2C-01-12	Systematic	Wall 3	4	1
SYS-2C-01-13	Systematic	Wall 2	6	1

Area: Area 7				
Label	Type	Surface	LX	LY
SYS-2C-01-14	Systematic	Floor	7	2
SYS-2C-01-15	Systematic	Floor	3	8
SYS-2C-01-16	Systematic	Wall 1	2	6
SYS-2C-01-17	Systematic	Wall 2	0	6
SYS-2C-01-18	Systematic	Wall 2	8	6
SYS-2C-01-19	Systematic	Wall 3	7	6
SYS-2C-01-20	Systematic	Wall 4	5	6

COPY

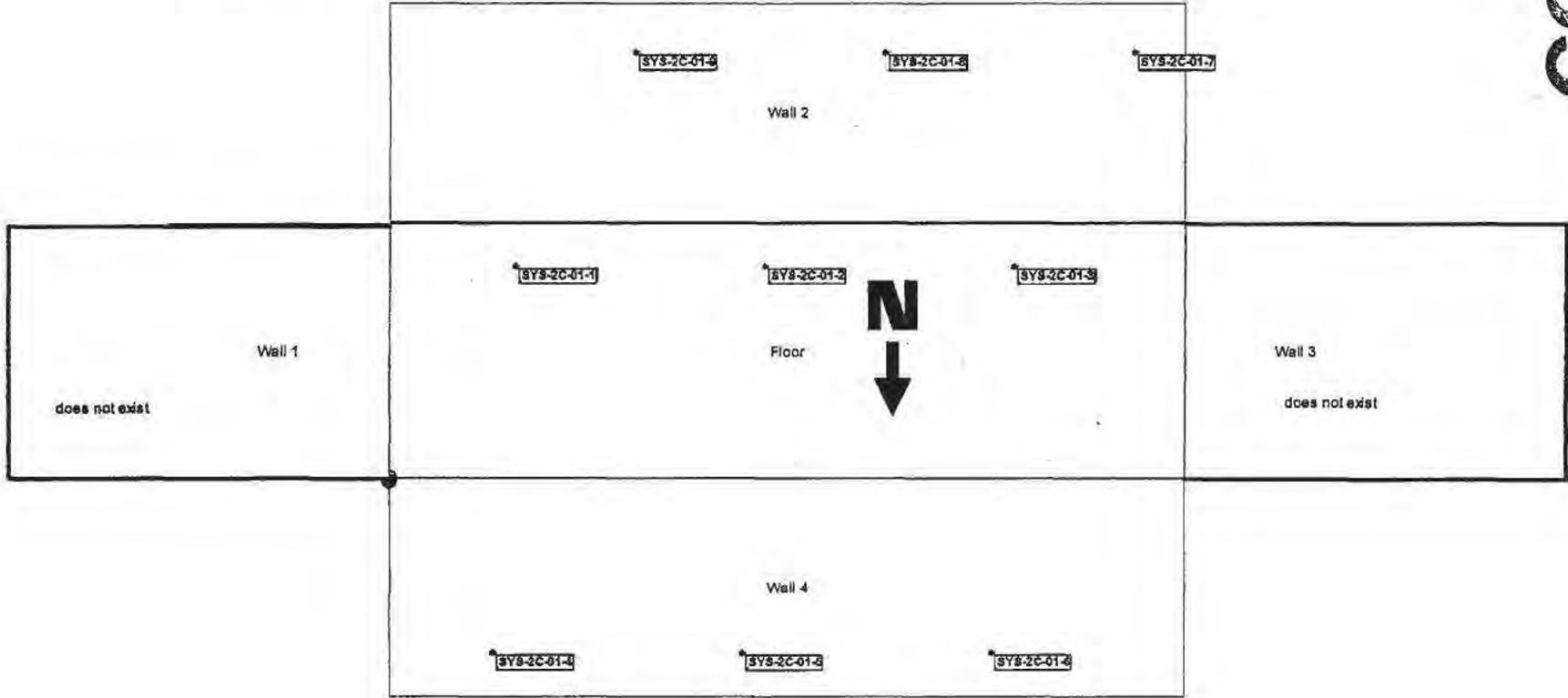
F326/358

MT-06-0580

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SYS-02C-01
lower static measurement locations

area 5

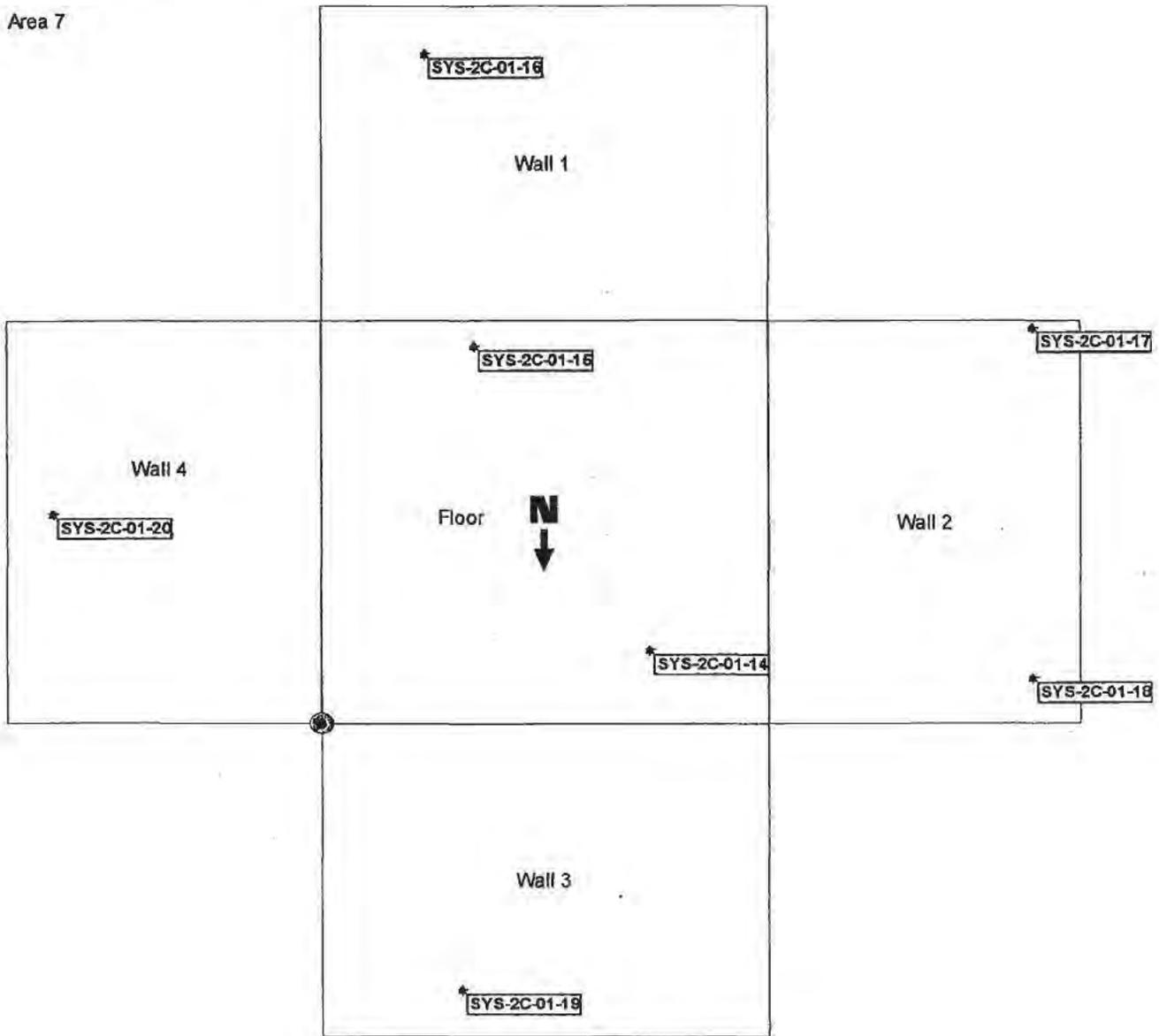


COPY

F 327/353

SYS-02C-01
lower static measurement locations

Area 7

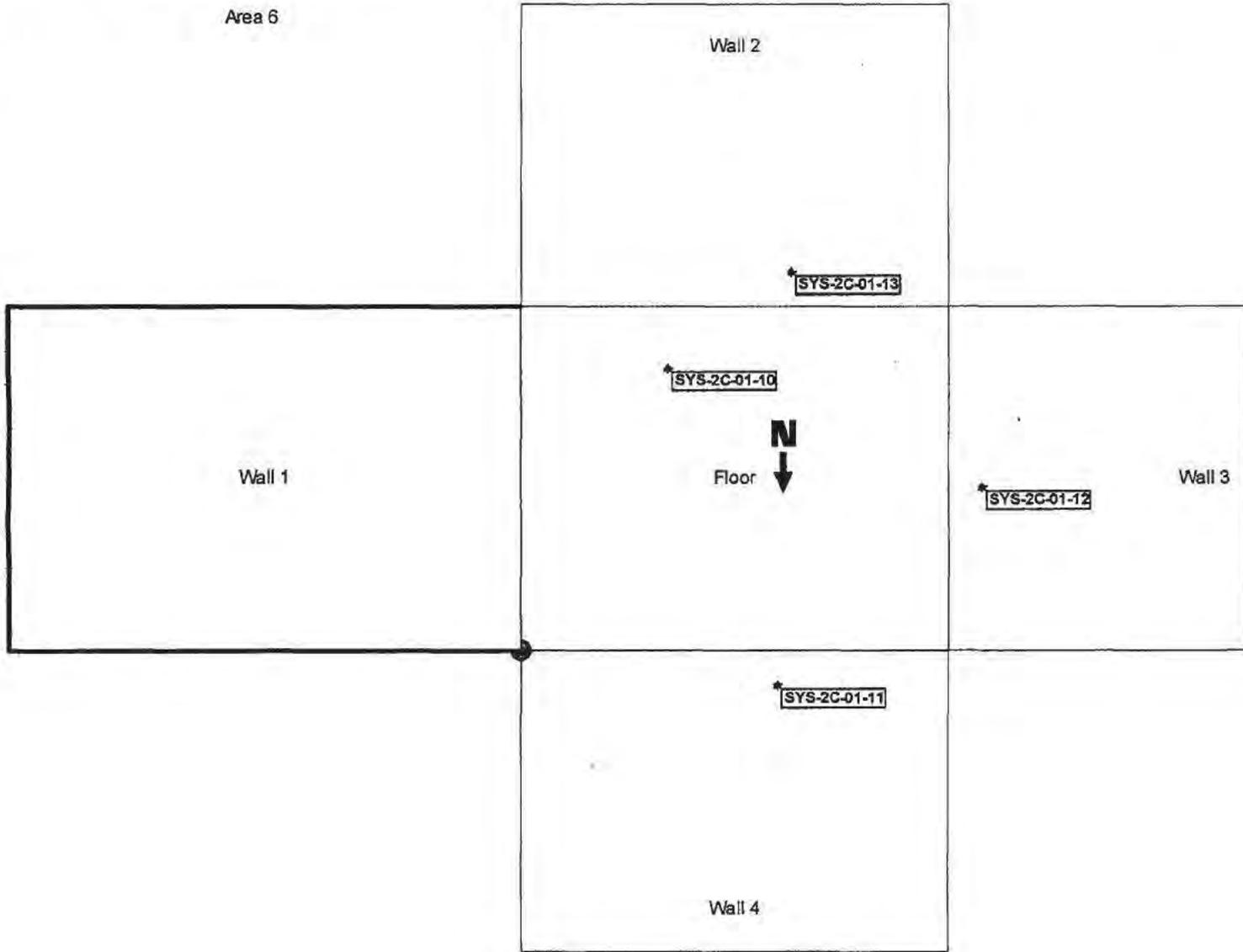


COPY

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SYS-02C -01
lower static measurement locations

Area 6



COPY

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T-Building Lower Static Survey SYS02C

RSDS# MT-06-0580

RCT:

RCT:

Alpha	43-68 BKG:	0	EFF:	0.21	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.16	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02C0101S	5920		5929	1	1	6/13/06	12:42	30	120	113
ALPHA	SYS02C0102S	5920		5929	1	2	6/13/06	12:46	26	120	98
ALPHA	SYS02C0103S	5920		5929	1	3	6/13/06	12:50	41	120	155
ALPHA	SYS02C0104S	5920		5929	1	4	6/13/06	12:54	13	120	49
ALPHA	SYS02C0105S	5920		5929	1	5	6/13/06	12:58	12	120	45
ALPHA	SYS02C0106S	5920		5929	1	6	6/13/06	13:02	10	120	38
ALPHA	SYS02C0107S	5920		5929	1	7	6/13/06	13:06	12	120	45
ALPHA	SYS02C0108S	5920		5929	1	8	6/13/06	13:09	24	120	91
ALPHA	SYS02C0109S	5920		5929	1	9	6/13/06	13:13	8	120	30
ALPHA	SYS02C0110S	5920		5929	1	10	6/13/06	13:17	43	120	163
ALPHA	SYS02C0111S	5920		5929	1	11	6/13/06	13:21	7	120	26
ALPHA	SYS02C0112S	5920		5929	1	12	6/13/06	13:25	16	120	60
ALPHA	SYS02C0113S	5920		5929	1	13	6/13/06	13:28	3	120	11
ALPHA	SYS02C0114S	5920		5929	1	14	6/13/06	13:32	84	120	317
ALPHA	SYS02C0115S	5920		5929	1	15	6/13/06	13:35	52	120	197
ALPHA	SYS02C0116S	5920		5929	1	16	6/13/06	13:39	7	120	26
ALPHA	SYS02C0117S	5920		5929	1	17	6/13/06	13:43	4	120	15
ALPHA	SYS02C0118S	5920		5929	1	18	6/13/06	13:47	15	120	57
ALPHA	SYS02C0119S	5920		5929	1	19	6/13/06	13:50	13	120	49
ALPHA	SYS02C0120S	5920		5929	1	20	6/13/06	13:54	14	120	53
BETA	SYS02C0101S	5920		5929	2	1	6/13/06	12:43	159	60	1577
BETA	SYS02C0102S	5920		5929	2	2	6/13/06	12:47	175	60	1736
BETA	SYS02C0103S	5920		5929	2	3	6/13/06	12:51	200	60	1984
BETA	SYS02C0104S	5920		5929	2	4	6/13/06	12:55	122	60	1210
BETA	SYS02C0105S	5920		5929	2	5	6/13/06	12:59	120	60	1190
BETA	SYS02C0106S	5920		5929	2	6	6/13/06	13:03	134	60	1329
BETA	SYS02C0107S	5920		5929	2	7	6/13/06	13:07	126	60	1250
BETA	SYS02C0108S	5920		5929	2	8	6/13/06	13:11	132	60	1310
BETA	SYS02C0109S	5920		5929	2	9	6/13/06	13:15	113	60	1121
BETA	SYS02C0110S	5920		5929	2	10	6/13/06	13:18	217	60	2153
BETA	SYS02C0111S	5920		5929	2	11	6/13/06	13:22	150	60	1488
BETA	SYS02C0112S	5920		5929	2	12	6/13/06	13:26	257	60	2550
BETA	SYS02C0113S	5920		5929	2	13	6/13/06	13:29	116	60	1151
BETA	SYS02C0114S	5920		5929	2	14	6/13/06	13:33	334	60	3313
BETA	SYS02C0115S	5920		5929	2	15	6/13/06	13:37	302	60	2996
BETA	SYS02C0116S	5920		5929	2	16	6/13/06	13:40	127	60	1260
BETA	SYS02C0117S	5920		5929	2	17	6/13/06	13:44	99	60	982
BETA	SYS02C0118S	5920		5929	2	18	6/13/06	13:48	109	60	1081
BETA	SYS02C0119S	5920		5929	2	19	6/13/06	13:51	105	60	1042
BETA	SYS02C0120S	5920		5929	2	20	6/13/06	13:55	118	60	1171
	N/A										

COPY

F330/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T Bldg T99 crawlspace	SURVEY NO.	MT-06-0581
PURPOSE:	MARSSIM - STATIC MEASUREMENTS (UPPER) Unit 5X502C	RWP NO.	NA
		DATE:	6-14-06
		TIME:	1000

MAP / DRAWING

SEE ATTACHED
SCANNED 1m² AROUND EACH CEILING POINT

COPY

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr (β+γ+γ) extremity on contact
K = factor of 1000
- - - - - = radiological boundary

△ # = mrem/hr neutron # = swipe number
= air sample number #/α or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
G 2350	5922 / 5926	5/17/07
N A		

Completed by: (Signature)	<i>[Signature]</i>	Date:	6-14-06
Completed by: (Print Name)	George Hodges Stephen Richards on		
Counted by: (Signature)	<i>[Signature]</i>	HP#	Date:
Counted by: (Print Name)	see attached		
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald R. Daily		F 331 / 353

[Handwritten initials]

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	βγ	Alpha	Tritium	Comments
1	see attached	see attached	see attached	0201
2				0202
3				0203
4				0204
5				0205
6				0206
7				0207
8				0208
9				0209
10				0210
11				0211
12				0212
13				0213
14				0214
15				0215
16				0216
17				0217
18				0218
19				0219
20	SEE ATTACHED			0220
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	βγ	Alpha	Tritium	Comments
N/A				

COMMENTS: N/A **COPY**

- NOTES:
- See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
 - To request RO Count Room analysis for βγ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
 - Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_1\20060614_1735.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0581.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_1.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off
Regions Half Life Units Reference Date Reference Time

COPY
333/353

M30F10
RCH

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tsIE	DPM1	A:2S%	MESSAGES	P#
6/14/06	5:35:47 PM	-1		10.00	8	7	9	14	603.53	0	22.4	B	1
6/14/06	5:46:36 PM	0		2.00	252	239	4	1	530.00	494	9.1		1
6/14/06	5:49:20 PM	1		2.00	3	3	1	5	621.01	5	196.7		1
6/14/06	5:52:04 PM	2		2.00	2	2	0	0	615.27	3	294.5		1
6/14/06	5:54:47 PM	3		2.00	1	0	0	0	597.28	1	567.7		1
6/14/06	5:57:30 PM	4		2.00	3	3	1	0	594.88	6	167.3		1
6/14/06	6:00:13 PM	5		2.00	2	2	2	5	609.04	3	313.9		1
6/14/06	6:02:57 PM	6		2.00	1	1	1	6	604.51	2	538.0		1
6/14/06	6:05:41 PM	7		2.00	1	1	0	0	597.91	1	897.4		1
6/14/06	6:08:25 PM	8		2.00	0	0	1	0	524.56	0	*****		1
6/14/06	6:11:09 PM	9		2.00	2	3	3	0	547.53	4	240.7		1
6/14/06	6:13:52 PM	10		2.00	3	4	0	5	592.90	6	167.3		1
6/14/06	6:16:34 PM	11		2.00	0	0	1	0	533.62	0	0.0		1
6/14/06	6:19:18 PM	12		2.00	1	1	0	6	595.08	1	897.4		1
6/14/06	6:22:02 PM	13		2.00	15	15	0	4	455.85	32	46.9		1
6/14/06	6:24:46 PM	14		2.00	4	4	0	0	582.87	8	130.4		1
6/14/06	6:27:28 PM	15		2.00	3	4	2	0	600.48	6	151.6		1
6/14/06	6:30:11 PM	16		2.00	8	8	0	0	597.29	15	74.2		1
6/14/06	6:32:59 PM	17		2.00	10	9	3	0	561.74	19	62.6		1
6/14/06	6:35:43 PM	18		2.00	0	0	0	0	599.83	0	0.0		1
6/14/06	6:38:26 PM	19		2.00	32	29	3	1	596.61	59	28.5		1
6/14/06	6:41:09 PM	20		2.00	3	4	1	0	615.07	5	167.3		1

5

COPY
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pg 40F1D
MT-06-0581

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_164
 Batch Ended: 6/14/06 14:54
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0581 [20] RICHARDSON 6-14-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.21		1.68	2.26	
A2	2	0.00	2.03		1.52	2.02	
A3	3	0.00	2.30		1.55	2.18	
A4	4	0.00	2.10		0.00	1.21	
B1	5	1.58	1.91		1.22	2.06	
B2	6	0.00	1.87		0.48	1.58	
B3	7	0.00	2.20		0.27	1.88	
B4	8	0.00	1.97		0.66	1.69	
C1	9	0.00	2.07		0.00	1.27	
C2	10	0.00	1.97		2.78	2.30	
C3	11	0.00	2.12		0.00	1.27	
C4	12	0.00	2.01		2.71	2.27	
D1	13	0.00	2.06		0.28	1.77	
D2	14	0.00	2.15		0.00	1.20	
D3	15	0.00	2.10		0.26	1.76	
D4	16	0.00	2.05		0.40	1.66	
C1	17	0.00	2.08		0.00	1.78	
C2	18	0.00	1.93		0.00	1.16	
C3	19	0.00	2.15		1.71	2.19	
C4	20	0.00	1.99		0.45	1.61	

ok

ok

COPY

F 335/353

0950710


T-Building Upper Statics SYS02C 99 crawlspace

RSDS# MT-06-0581 RCT: RCT:

Alpha	43-68 BKG:	0	EFF:	0.2	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1611	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SYS02C0201S	5922		5926	1	1	6/14/06	8:00	15	120	60
ALPHA	SYS02C0202S	5922		5926	1	2	6/14/06	8:06	11	120	44
ALPHA	SYS02C0203S	5922		5926	1	3	6/14/06	8:12	7	120	28
ALPHA	SYS02C0204S	5922		5926	1	4	6/14/06	8:16	11	120	44
ALPHA	SYS02C0205S	5922		5926	1	5	6/14/06	8:20	7	120	28
ALPHA	SYS02C0206S	5922		5926	1	6	6/14/06	8:28	12	120	48
ALPHA	SYS02C0207S	5922		5926	1	7	6/14/06	8:35	13	120	52
ALPHA	SYS02C0208S	5922		5926	1	8	6/14/06	8:39	11	120	44
ALPHA	SYS02C0209S	5922		5926	1	9	6/14/06	8:43	5	120	20
ALPHA	SYS02C0210S	5922		5926	1	10	6/14/06	9:37	10	120	40
ALPHA	SYS02C0211S	5922		5926	1	11	6/14/06	9:41	5	120	20
ALPHA	SYS02C0212S	5922		5926	1	12	6/14/06	9:44	18	120	71
ALPHA	SYS02C0213S	5922		5926	1	13	6/14/06	9:48	2	120	8
ALPHA	SYS02C0214S	5922		5926	1	14	6/14/06	9:51	4	120	16
ALPHA	SYS02C0215S	5922		5926	1	15	6/14/06	9:55	7	120	28
ALPHA	SYS02C0216S	5922		5926	1	16	6/14/06	9:58	10	120	40
ALPHA	SYS02C0217S	5922		5926	1	17	6/14/06	10:06	5	120	20
ALPHA	SYS02C0218S	5922		5926	1	18	6/14/06	10:09	8	120	32
ALPHA	SYS02C0219S	5922		5926	1	19	6/14/06	10:13	10	120	40
ALPHA	SYS02C0220S	5922		5926	1	20	6/14/06	10:16	8	120	32
BETA	SYS02C0201S	5922		5926	2	1	6/14/06	8:01	123	60	1212
BETA	SYS02C0202S	5922		5926	2	2	6/14/06	8:07	130	60	1281
BETA	SYS02C0203S	5922		5926	2	3	6/14/06	8:13	191	60	1882
BETA	SYS02C0204S	5922		5926	2	4	6/14/06	8:17	278	60	2739
BETA	SYS02C0205S	5922		5926	2	5	6/14/06	8:21	159	60	1567
BETA	SYS02C0206S	5922		5926	2	6	6/14/06	8:29	137	60	1350
BETA	SYS02C0207S	5922		5926	2	7	6/14/06	8:36	122	60	1202
BETA	SYS02C0208S	5922		5926	2	8	6/14/06	8:40	122	60	1202
BETA	SYS02C0209S	5922		5926	2	9	6/14/06	8:44	151	60	1488
BETA	SYS02C0210S	5922		5926	2	10	6/14/06	9:38	136	60	1340
BETA	SYS02C0211S	5922		5926	2	11	6/14/06	9:42	151	60	1488
BETA	SYS02C0212S	5922		5926	2	12	6/14/06	9:45	104	60	1025
BETA	SYS02C0213S	5922		5926	2	13	6/14/06	9:49	167	60	1645
BETA	SYS02C0214S	5922		5926	2	14	6/14/06	9:52	115	60	1133
BETA	SYS02C0215S	5922		5926	2	15	6/14/06	9:56	97	60	956
BETA	SYS02C0216S	5922		5926	2	16	6/14/06	10:00	91	60	897
BETA	SYS02C0217S	5922		5926	2	17	6/14/06	10:07	142	60	1399
BETA	SYS02C0218S	5922		5926	2	18	6/14/06	10:10	123	60	1212
BETA	SYS02C0219S	5922		5926	2	19	6/14/06	10:14	121	60	1192
BETA	SYS02C0220S	5922		5926	2	20	6/14/06	10:17	167	60	1645
						N					
						A					

COPY

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SYS-02C-02
upper static measurement locations

Area: area 5				
Label	Type	Surface	LX	LY
SYS-02C-02-1	Systematic	ceiling-f	7	3
SYS-02C-02-2	Systematic	ceiling-f	18	3

Area: Area 6				
Label	Type	Surface	LX	LY
SYS-02C-02-3	Systematic	Wall 4	8	0
SYS-02C-02-4	Systematic	Wall 3	5	0
SYS-02C-02-5	Systematic	Wall 2	3	0

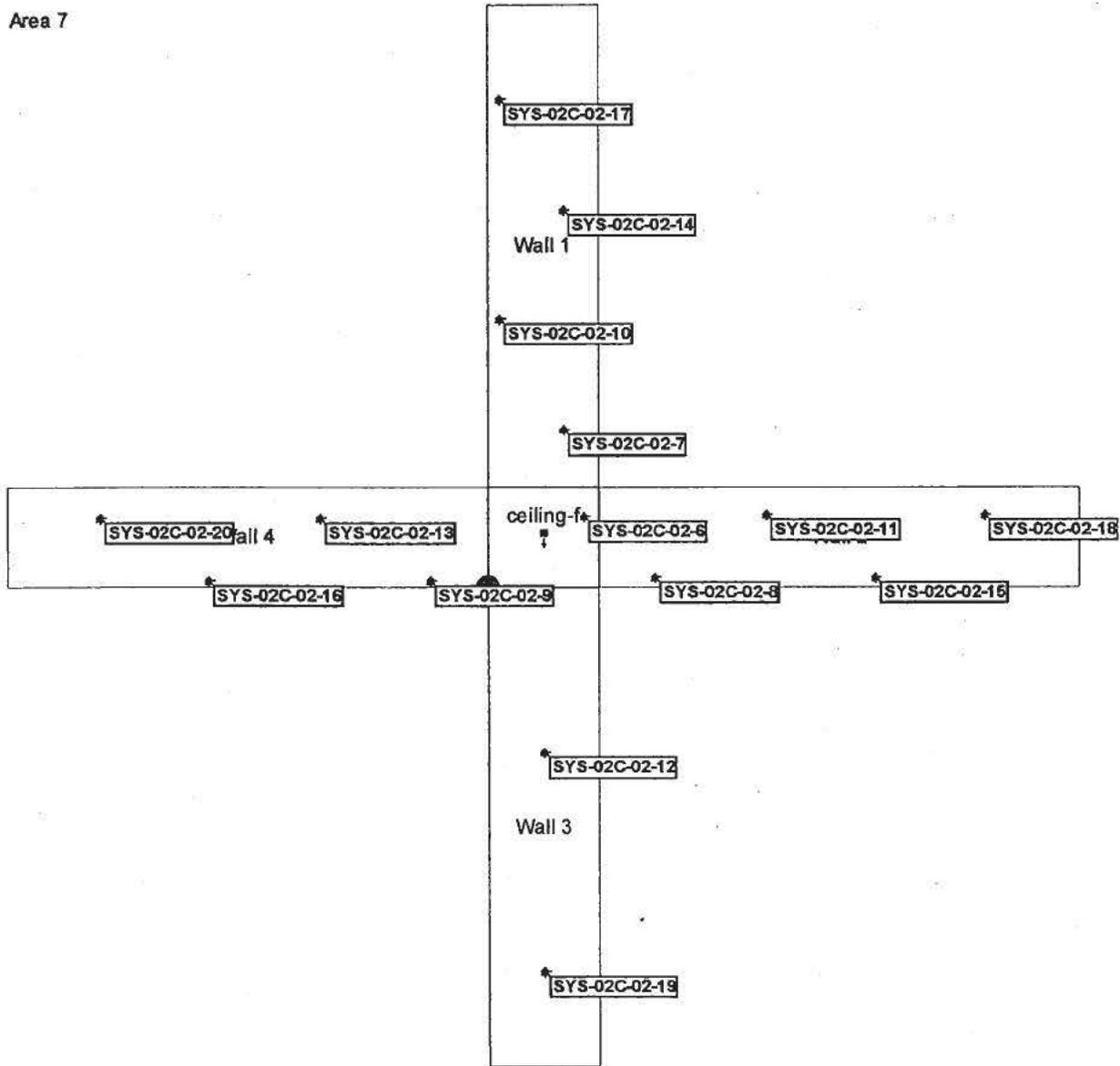
Area: Area 7				
Label	Type	Surface	LX	LY
SYS-02C-02-6	Systematic	ceiling-f	9	6
SYS-02C-02-7	Systematic	Wall 1	7	5
SYS-02C-02-8	Systematic	Wall 2	8	5
SYS-02C-02-9	Systematic	Wall 4	1	5
SYS-02C-02-10	Systematic	Wall 1	1	15
SYS-02C-02-11	Systematic	Wall 2	3	15
SYS-02C-02-12	Systematic	Wall 3	5	15
SYS-02C-02-13	Systematic	Wall 4	6	15
SYS-02C-02-14	Systematic	Wall 1	7	25
SYS-02C-02-15	Systematic	Wall 2	8	25
SYS-02C-02-16	Systematic	Wall 4	1	25
SYS-02C-02-17	Systematic	Wall 1	1	35
SYS-02C-02-18	Systematic	Wall 2	3	35
SYS-02C-02-19	Systematic	Wall 3	5	35
SYS-02C-02-20	Systematic	Wall 4	6	35

COPY

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SYS-02C-02
upper static measurement locations

Area 7

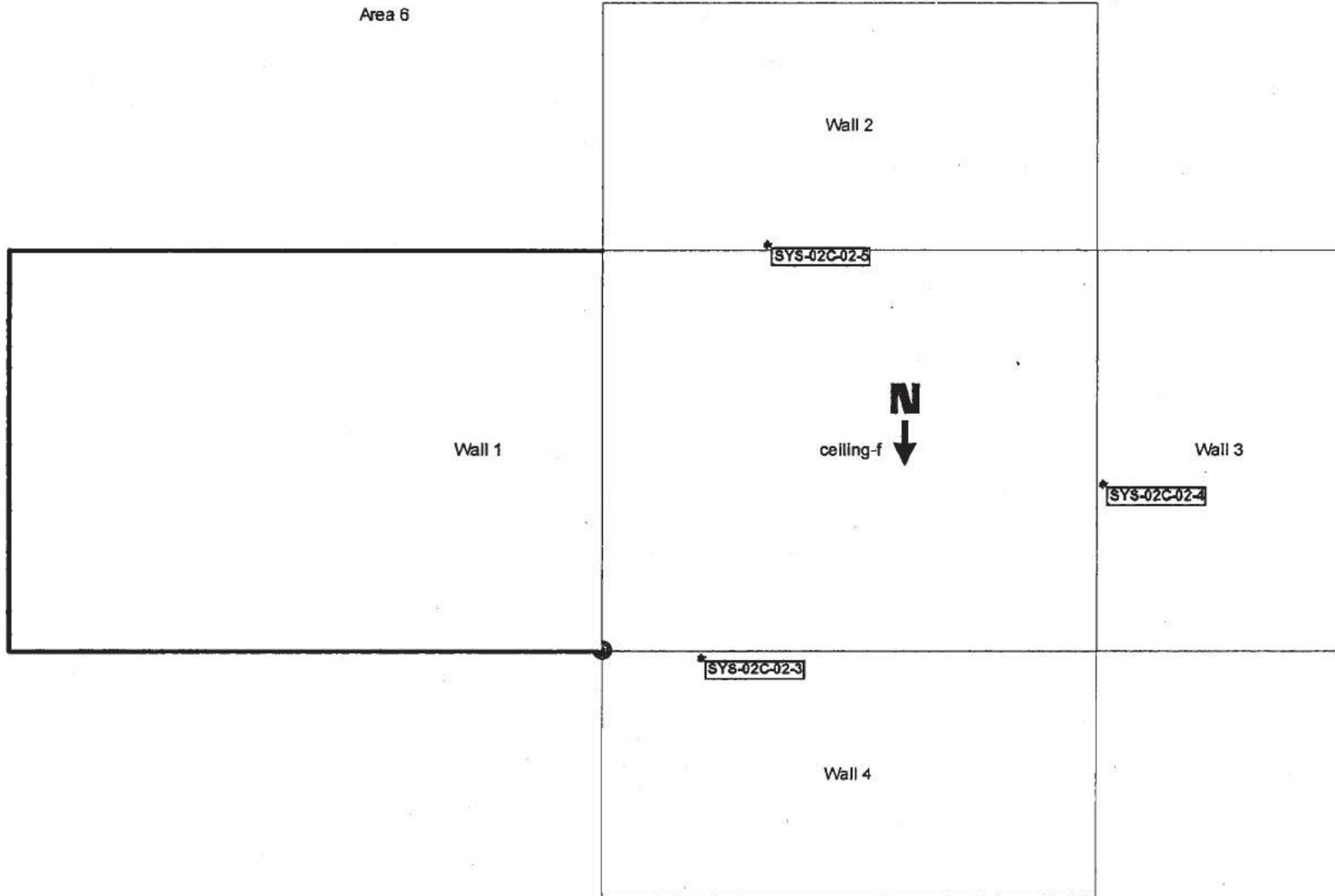


COPY

F328/353

PA 90F10
MT 06-0581

SYS-02C-02
upper static measurement locations

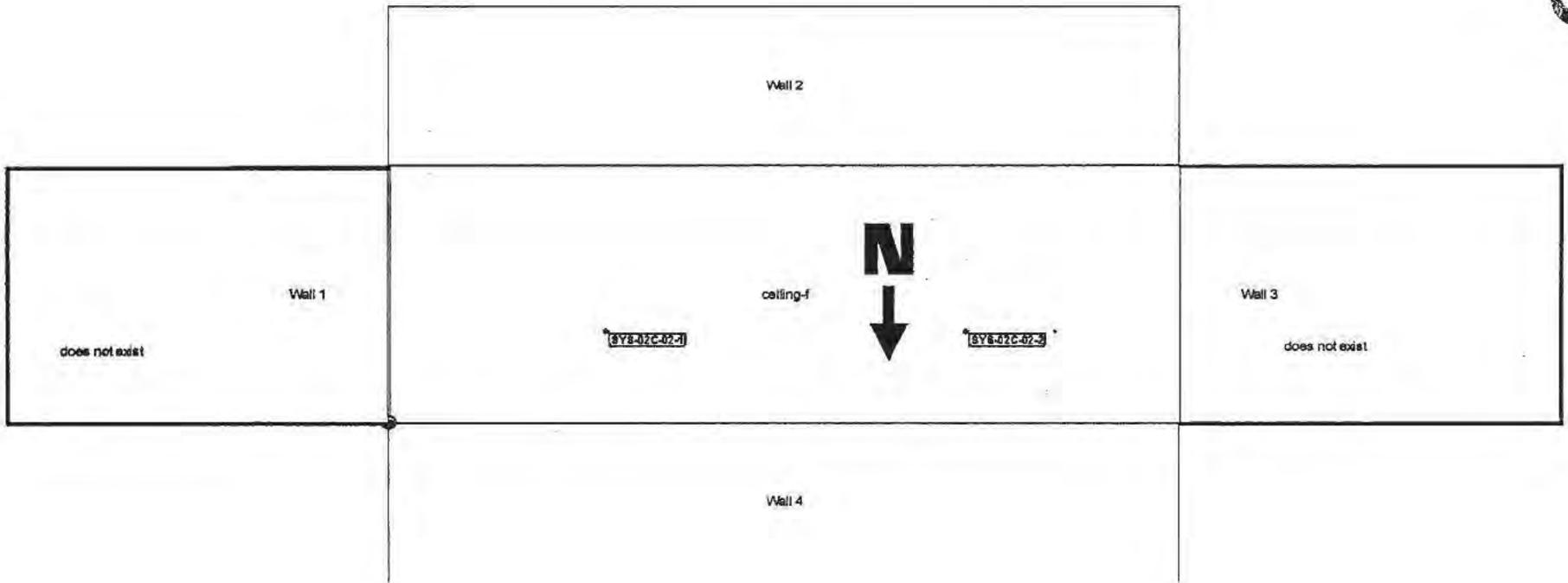


COPY
F339/353

pg 100F10
MNT-06-058

SYS-02C-02
upper static measurement locations

area 5



COPY
F3410/353

RADIOLOGICAL SURVEY DATA SHEET

6/19/06
Page 1 of 8/10

LOCATION: (BLDG/AREA/ROOM) <i>TBLDG West/Lead Home</i>	SURVEY NO. <i>MT-06-0382</i>
PURPOSE: <i>Upper and lower judgement</i>	RWP NO. <i>N/A</i>
<i>5/502C</i>	DATE: <i>6/14/06</i>
	TIME: <i>1240</i>

MAP / DRAWING

Scanned 1m³ around ceiling judgement

See attached map

COPY

- LEGEND:
- # = mrem/hr (γ) whole body
 - #E = mrem/hr ($\beta + \gamma$) extremity on contact
 - K = factor of 1000
 - = radiological boundary
 - Δ # = mrem/hr neutron
 - # = swipe number
 - # = air sample number
 - #/a or β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<i>2350</i>	<i>5920/5929</i>	<i>11/15/06</i>
 	 	
 	 	

Completed by: (Signature) <i>Wayne Jones</i>	Date: <i>6/14/06</i>
Completed by: (Print Name) <i>Wayne Jones / Scott Hollasch</i>	
Counted by: (Signature) <i>all attached</i>	HP#
Counted by: (Print Name)	Date:
Reviewed/Approved by: (Signature) <i>Ronald R. Daily</i>	Date: <i>6-19-06</i>
Reviewed/Approved by: (Print Name) <i>Ronald R. Daily</i>	<i>241/353</i>

RRD

MT-06-0582
308
6/19/06

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_166
Batch Ended: 6/14/06 15:15
Cal. Due Date: 11/17/06
Serial Number: 26966-3

COPY

Batch ID: MT-06-0582 W. JONES (20) AG

Detector ID	Sample ID
A1	1
A2	2
A3	3
A4	4
B1	5
B2	6
B3	7
B4	8
C1	9
C2	10
C3	11
C4	12
D1	13
D2	14
D3	15
D4	16
A1	17
A2	18
A3	19
A4	20

Alpha Activity		
DPM	σ	flag
0.00	2.18	
0.00	2.00	
0.00	2.26	
0.00	2.13	
0.00	1.91	
0.00	1.91	
0.00	2.18	
1.68	1.95	
0.00	2.08	
0.00	1.94	
0.00	2.14	
0.00	2.00	
0.00	2.06	
1.93	2.16	
0.00	2.12	
0.00	2.06	
0.00	2.18	
0.00	2.03	
0.00	2.26	
0.00	2.13	

Beta Activity		
DPM	σ	flag
0.00	1.31	
0.00	1.17	
0.00	1.26	
1.78	2.09	
1.44	2.06	
2.71	2.23	
0.00	1.34	
0.00	1.20	
0.00	1.78	
0.48	1.63	
0.45	1.79	
1.58	1.97	
0.28	1.77	
0.00	1.20	
1.50	2.15	
1.57	2.03	
0.00	1.31	
1.52	2.02	
0.00	1.26	
1.78	2.09	

WJ

WJ

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Page tott WJ
6/15/06

ADP

MARSSIM Smear Data

Assay Definition-

Assay Description:
MARSSIM Smear Data

Assay Type: DPM (Single)
Report Name: Report1
Output Data Path: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\TriCarb\Results\5801\MARSSIM_Smear_2\20060614_1626.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0582.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.lsa

Count Conditions-

Nuclide: H-3 Mound
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2st
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: H-3 Smear
Count Time (min): 2.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.5	18.6	1st Vial
B	2.0	18.6	1st Vial
C	40.0	2000.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Regions	Half Life	Units	Reference Date	Reference Time
A				

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w2/19/06

MT-06-0582

344/353

Red

MARSSIM Smear Data

B
C

Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

COPY

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tsIE	DPM1	A:2S%	MESSAGES	P#
6/14/06	4:27:30 PM	-1		10.00	8	7	11	3	611.32	0	22.9	B	2
6/14/06	4:38:19 PM	0		2.00	32	31	1	1	536.57	63	28.1		2
6/14/06	4:41:01 PM	1		2.00	1	1	0	0	627.75	2	497.4		2
6/14/06	4:43:45 PM	2		2.00	4	4	0	4	587.91	7	130.8		2
6/14/06	4:46:29 PM	3		2.00	8	8	0	3	573.20	16	70.5		2
6/14/06	4:49:11 PM	4		2.00	3	4	0	0	609.36	6	146.7		2
6/14/06	4:51:55 PM	5		2.00	1	1	0	0	606.12	2	524.3		2
6/14/06	4:54:39 PM	6		2.00	11	9	2	14	565.71	20	58.9		2
6/14/06	4:57:22 PM	7		2.00	8	8	0	3	566.68	15	73.9		2
6/14/06	5:00:06 PM	8		2.00	3	3	0	0	533.24	6	158.1		2
6/14/06	5:02:49 PM	9		2.00	0	0	0	19	579.78	1	1090.9		2
6/14/06	5:05:31 PM	10		2.00	5	4	0	0	607.27	10	99.8		2
6/14/06	5:08:14 PM	11		2.00	5	5	0	4	597.08	10	98.3		2
6/14/06	5:10:56 PM	12		2.00	5	4	0	0	634.77	8	114.6		2
6/14/06	5:13:39 PM	13		2.00	22	20	0	0	588.39	41	36.0		2
6/14/06	5:16:22 PM	14		2.00	4	5	2	0	560.65	8	118.2		2
6/14/06	5:19:05 PM	15		2.00	3	3	0	0	603.88	5	169.1		2
6/14/06	5:21:48 PM	16		2.00	5	5	0	0	505.94	10	108.1		2
6/14/06	5:24:37 PM	17		2.00	0	0	0	0	622.03	0	0.0		2
6/14/06	5:27:20 PM	18		2.00	8	7	0	0	544.29	15	73.9		2
6/14/06	5:30:03 PM	19		2.00	3	3	0	5	608.88	6	147.2		2
6/14/06	5:32:44 PM	20		2.00	8	8	0	3	569.16	16	70.5		2

WP

*pg 508
6/14/06
w 2/19/06*

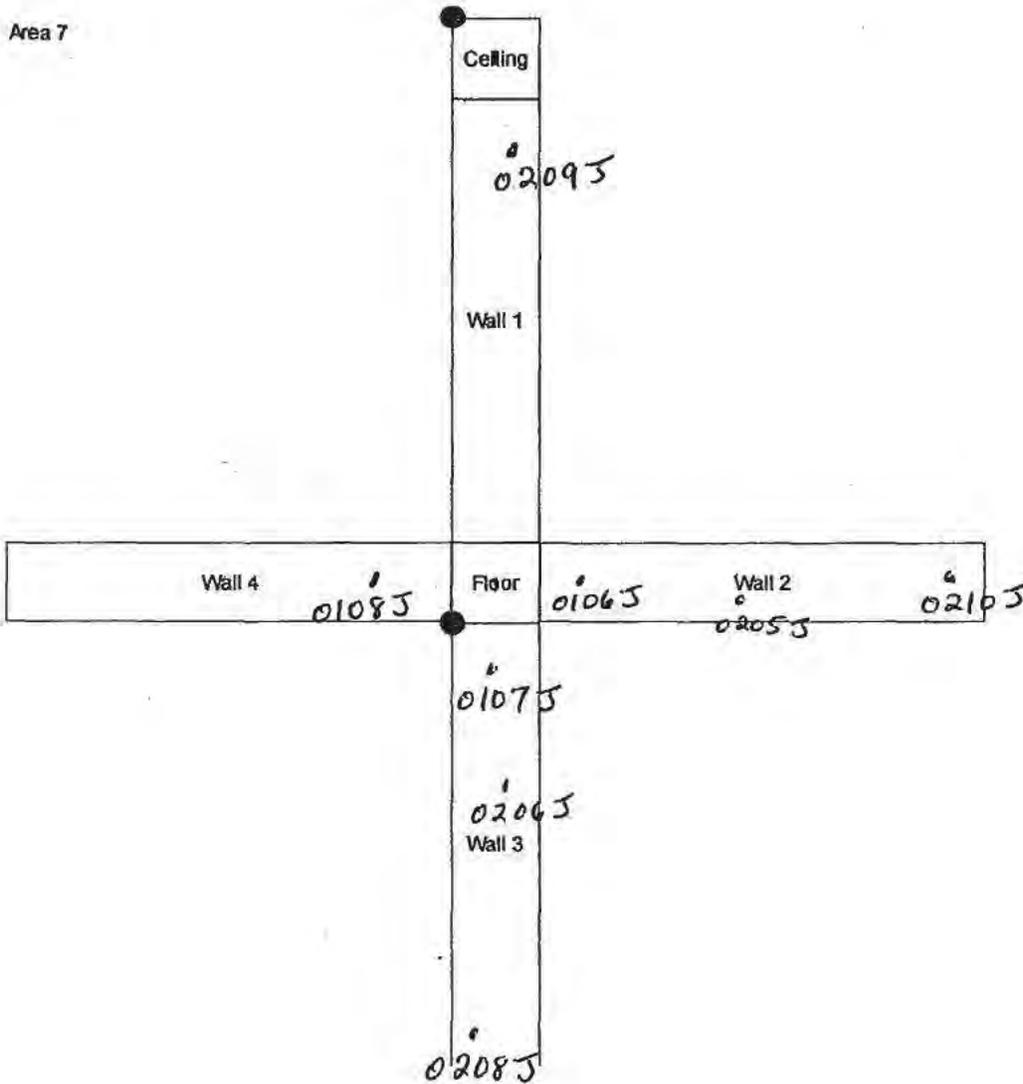
MT-06-0582

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MT-06-0582

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wg
6/19/16

SYS-02C East half of the west headhouse
Class 1 Judgmentals



COPY

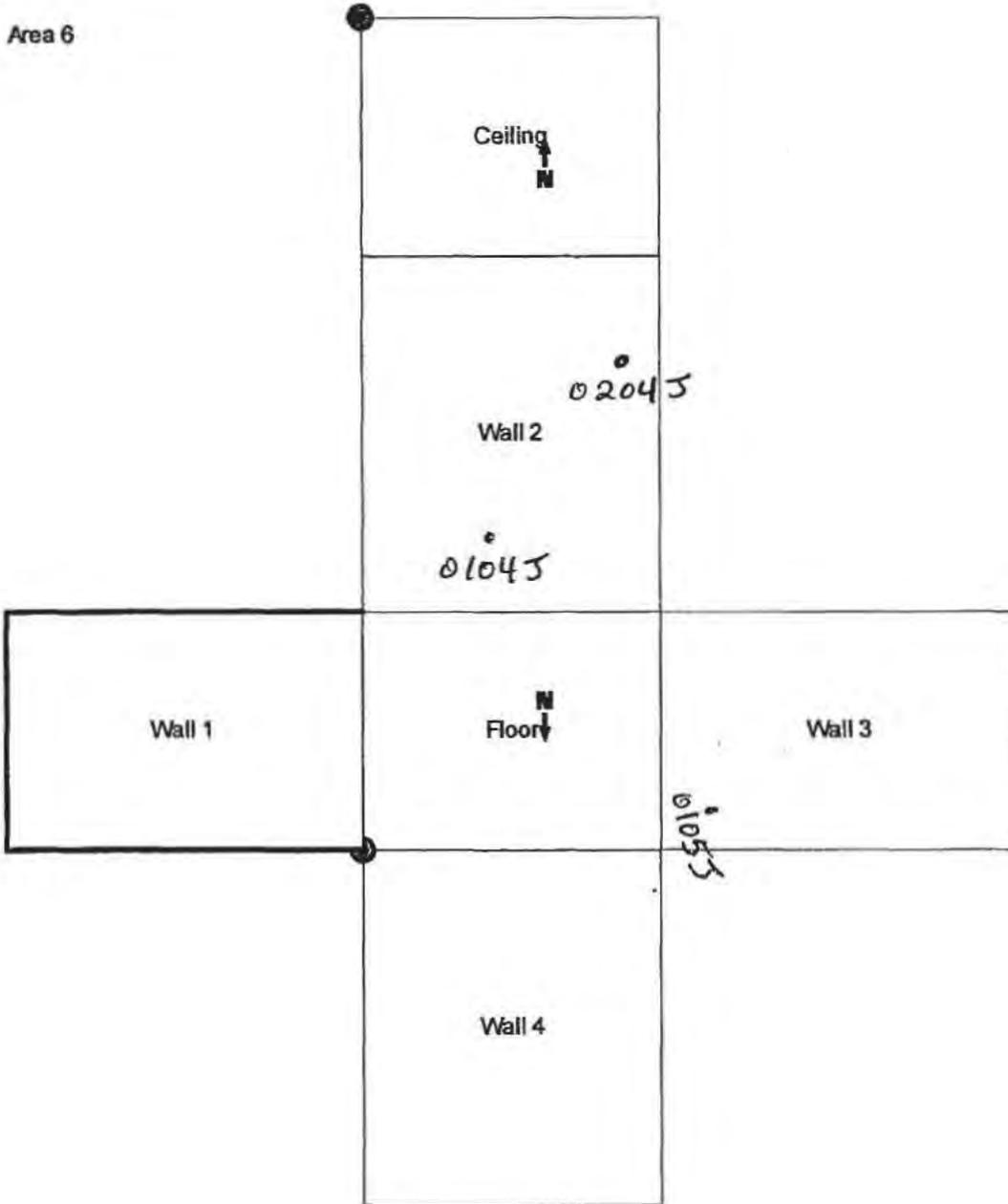
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wg
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SYS-02C
Class 1 Judgmentals

Area 6



COPY

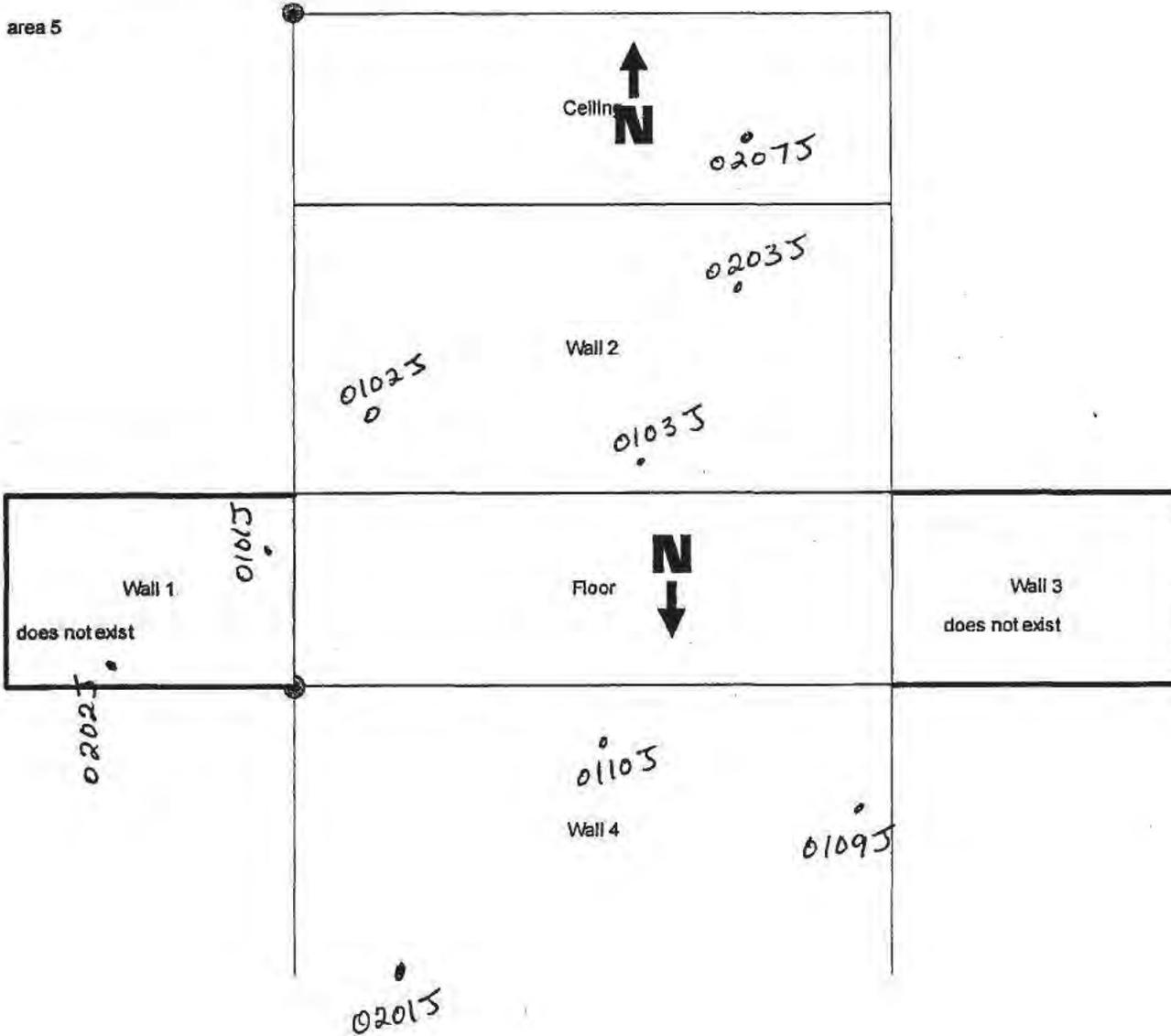
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WJ
6/19/06

SYS-02C
Class 1 Judgmentals

MT-06-0582

area 5



COPY

F218/353

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T BLDG HEADHOUSE	SURVEY NO.	MT-06-0589
PURPOSE:	DOSE RATES	RWP NO.	N/A
SYSOAC		DATE:	6/16/06
		TIME:	1600

MAP / DRAWING

SEE ATTACHED

BACKGROUND DOSE RATE 5 μ m/hr
 MAXIMUM DOSE RATE 5 μ m/hr

COPY

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr ($\beta + \gamma$) extremity on contact
- K = factor of 1000
- = radiological boundary
- Δ # = mrem/hr neutron
- # = swipe number
- # = air sample number
- #/α or β = direct contamination measurement in dpm/100 cm²

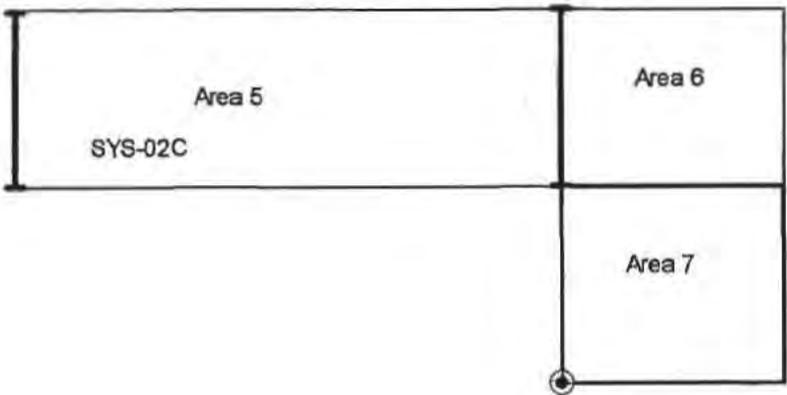
INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
BILON MM	3A81 (1483)	4/25/07
N/A		

Completed by: (Signature)	<i>[Signature]</i>	Date:	6-16-06
Completed by: (Print Name)	S Richardson		
Counted by: (Signature)	N/A	HP#	
Counted by: (Print Name)	N/A		
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	6-19-06
Reviewed/Approved by: (Print Name)	Ronald R. Daily		

F 351/353 *[Signature]*

SYS-02C From ladder to East part of the West Headhouse airshaft
Class 2 Plan View (laid flat on side)



DOSE RATE MEAS 5, 6, 7.
NO DETECTIBLE DOSE RATE
ABOVE BACKGROUND.

PA 301-3
MT-06-0589

COPY

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