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CH2M HILL Mound, Inc.

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SMO-477/06
August 7, 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 # various (see below), Final

Dear Mr. Pfister:

Attached are the following Final documents for your records:

- Final Status Report, T Building Survey Units # 1C-15, 1C-16, SYS-PRS 232, and SYS-PRS 233, Final
- Final Status Report, T Building Survey Units # SYS-06, SYS-06-01, SYS-06-02, and SYS-06-04, Final

If you or members of your staff have any questions regarding the documents, 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
 DCC (1) w/attachments

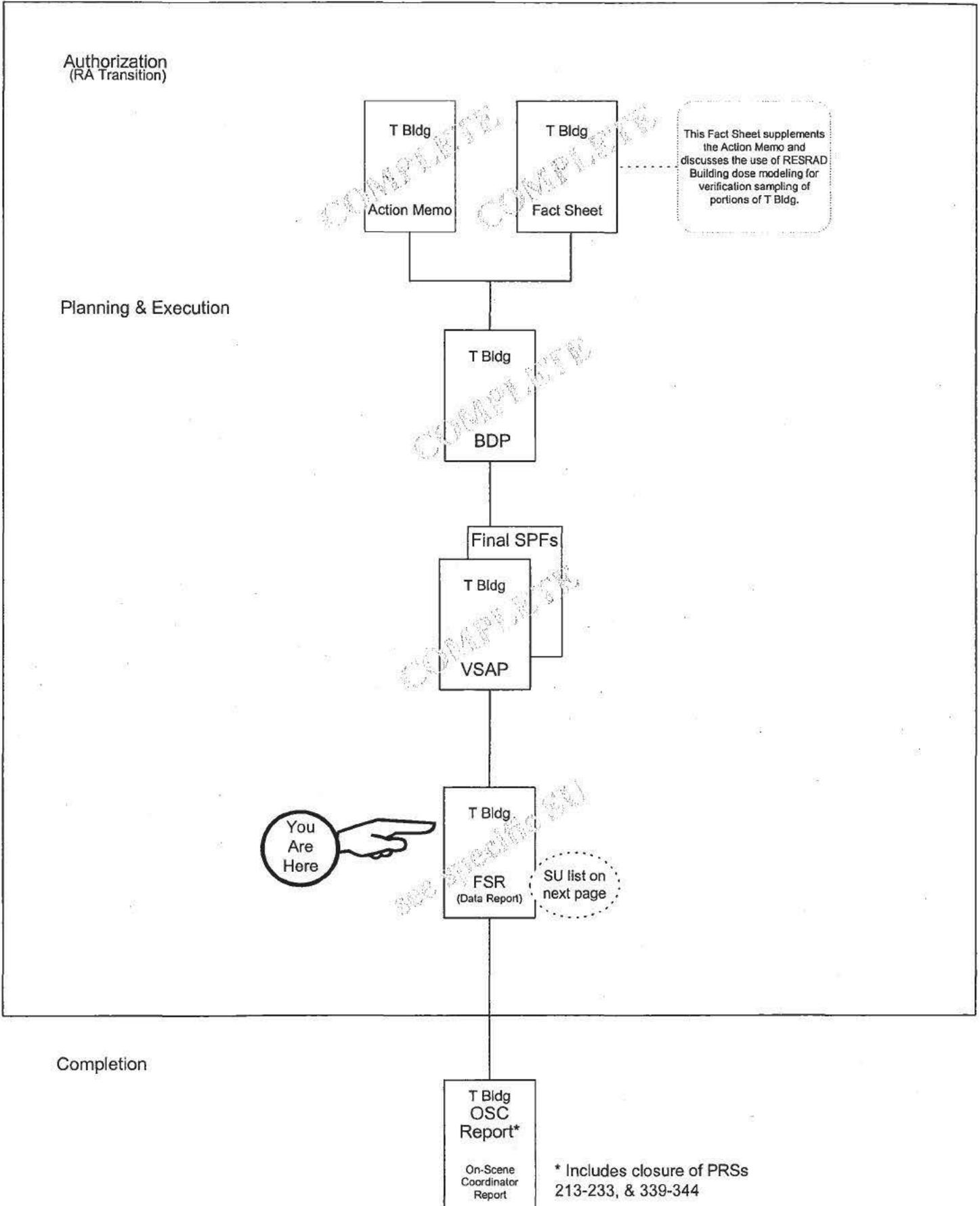
M. Ebben, CH2M Hill, w/o attachments
 K. Armstrong, CH2M Hill, w/o attachments
 D. Rakel, CH2M Hill, w/o attachments
 D. Kramer, CH2M Hill, w/o attachments
 C. Kline, CH2M Hill, w/o attachments
 S. Barr, CH2M Hill, w/o attachments
 S. Brindle, CH2M Hill, w/o attachments
 file, CH2M Hill, w/o attachments

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Final Status Survey Report – Final
T Building Survey Unit #s
1C-15, 1C-16, SYS-PRS 232, and SYS-PRS 233

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

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



T Building, Final Status Report, Survey Unit - You Are Here

1C-01	1S-09	2S-02B	SYS-07
1C-02	1S-10	2S-02C	SYS-08
1C-03	1S-11	2S-02D	SYS-09
1C-04	1S-12	2S-02E	SYS-10
1C-05	2C-01	2S-03	SYS-11
1C-06	2C-02	2S-04	SYS-12
1C-07	2C-03	2S-05	SYS-13
1C-08	2C-04	2S-06	SYS-14
1C-09	2C-05	2S-07A	SYS-15
1C-10	2C-06	2S-07B	SYS-16
1C-11	2C-07	2S-08	SYS-17
1C-12	2C-08	2S-09	SYS-18
1C-13	2C-09	2S-10	SYS-19
1C-14	2C-10	2S-11	SYS-20
→ 1C-15	2C-11	2S-12	SYS-21
→ 1C-16	2C-12	2S-13	SYS-PRS 213
1C-17	2C-13	2S-14	SYS-PRS 214
1C-18	2C-14	2S-15	SYS-PRS 215
1C-19	2C-15	2S-16	SYS-PRS 217
1C-20	2C-16	2S-17	SYS-PRS 219
1C-21	2C-17	2S-18	SYS-PRS 220
1CS-01-01	2C-18	2S-19	SYS-PRS 223
1CS-02-01	2C-19	5N-01	SYS-PRS 225
1CS-03-01	2C-20	5N-01A	SYS-PRS 226
1N-01	2CS-01-01	5N-02	SYS-PRS 227
1N-02A	2CS-01-02	5N-03	SYS-PRS 228
1N-02B	2CS-02-01	5N-04	SYS-PRS 229
1N-02C	2CS-02-02	5N-05	SYS-PRS 230
1N-02D	2CS-03-01	5N-06	→ SYS-PRS 232
1N-03A	2CS-03-02	5N-07	→ SYS-PRS 233
1N-03B	2CS-03-03	5N-08	SYS-PRS 339
1N-04	2N-01	5N-08A	SYS-PRS 340
1N-05	2N-02	SYS-01	SYS-PRS 341
1N-06	2N-03	SYS-01B	SYS-PRS 342
1N-07	2N-04	SYS-02A	SYS-PRS 343
1N-08	2N-05A	SYS-02B	SYS-PRS 344
1N-09	2N-05B	SYS-03	
1N-10	2N-06	SYS-04	
1S-01A	2N-07	SYS-05	
1S-01B	2N-08	SYS-05-01	
1S-01C	2N-09	SYS-05-02	
1S-02	2N-10	SYS-06	
1S-03	2N-11	SYS-06-01	
1S-04	2N-12	SYS-06-02	
1S-05	2N-13	SYS-06-04	
1S-06	2N-14		
1S-07	2N-15		
1S-08A	2S-01		
1S-08B	2S-02A		

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Attachments

- 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 Forms (T-01, T-05, 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.

1.1 Survey Unit Overview

Survey Unit 1C-15 (Room 61) and 1C-16 (Rooms 62 and 63) located in the Center Bay on the 1st floor of T Building has residual volumetric floor contamination. SU# SYS-PRS 233 (Sump 13) was located in the northeast corner of Room 63. These rooms and the sump were used for neutron source production during the 1950's and 1960's. There were two elevators (EL# 19 and EL# 20) located in Room 63. Both elevators had previously been removed. Room 62 currently a storage area occupies the space that was previously held by EL# 20. In the early 1970's, the area was decommissioned and decontaminated to the extent that was practical. The level of contamination has been reduced significantly, however residual bulk contamination remains in the floor of Rooms 61 and 63. The major contaminants of concern (COCs) are Am-241, Pu-238, Pu-239 and Cs-137.

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.

SYS-PRS 232 (Sump 12) was a low-risk Class 2 sump and SYS-PRS 233 (Sump 13) was a high-risk Class 1 sump that both supported the neutron source production operations. The sumps were taken out of service, went through D&D operations and were back filled with rubble. SYS-PRS 232 (Sump 12) was emptied of fill material, and then the sump was removed along with the steel liner and disposed of as radioactive waste. The drainpipes associated with SYS-PRS 232 were not removed. SYS-PRS 233 (Sump 13) was emptied of fill material, and then the sump was removed along with the steel liner and disposed of as radioactive waste. The drainpipes associated with SYS-PRS 233 (Sump 13) were removed and disposed of as radioactive waste along with the fill material surrounding the drainpipes. The room surfaces were free of dirt, insulation, and loose paint at the time of survey. The rooms were completely emptied prior to final status survey, doors were locked and/or access was restricted using barricades. The rooms, sumps, and drains were flooded prior to survey, however at the time of survey all surfaces were dry. The flood

occurred when a sump pump failed during heavy rains and most of the first floor was flooded. 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 ($\Delta/\sigma = DCGL-LBGR/\sigma$). 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 = 1st floor, center bay, SU# 1, floor & lower wall survey unit, static
2N-05-2V = 2nd 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 T-01 (Attachment E).

The sumps were removed. Gamma scans were performed on 100% of the area previously occupied by the sump. The drains associated with Class 1 sumps were removed. Gamma scans were performed on 100% of the drain chases that previously held the drainpipes. Drains associated with Class 2 sumps are surveyed at each accessible location. This survey consists of removing any drain covers and debris to fully expose the interior of the pipes and direct measurements for gross alpha and beta activity and smears for removable alpha, beta, and tritium contamination.

The ventilation systems are separate survey units, however as part the room surveys, vent covers are surveyed. Direct measurements and smears are taken directly on the vent cover. If activity on the vent cover appears to be elevated, the vent cover is removed and disposed of as radioactive waste and the interior of the immediate ventilation system is then surveyed as far as can be reached from the open vent. This survey consists of direct measurements for gross alpha and beta activity and smears for removable alpha, beta, and tritium contamination.

The utility systems are separate survey units, however as part the room surveys, utility drops and utility systems are surveyed. The survey for utility drops consists of removing any utility drop covers to expose the interior of the utility line. This survey consists of direct measurements for alpha and beta and smears for alpha, beta, and tritium. The survey for utility systems in rooms, such as fire water systems, is performed by taking direct measurements for gross alpha and beta activity and smears for removable alpha, beta, and tritium contamination on the exterior surfaces of the utility system.

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 walls and small areas. Large area scanning was performed using the Ludlum 2350-1 with 43-37 floor probe and/or the SHONKA Surface Contamination Monitor (SCM). 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 cm^2 at each data point. Smears were submitted to an onsite laboratory, where they were counted for tritium and 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 to determine the depth of contamination.

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 rooms 61, 62, and 63 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 and where SYS-PRS-232 and SYS-PRS 233 are in this survey unit.

Dose to future building occupants from residual contamination in Room 61, 62, and 63 has been shown to be less than 15 mrem/yr, in accordance with Mound 2000. No contributing dose was calculated for areas that met the surface release criteria. The dose contribution from surrounding areas or sources is provided in Attachment D on pages D58A and D58B. 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)

A1/2

Attachment A

Surface Release Criteria

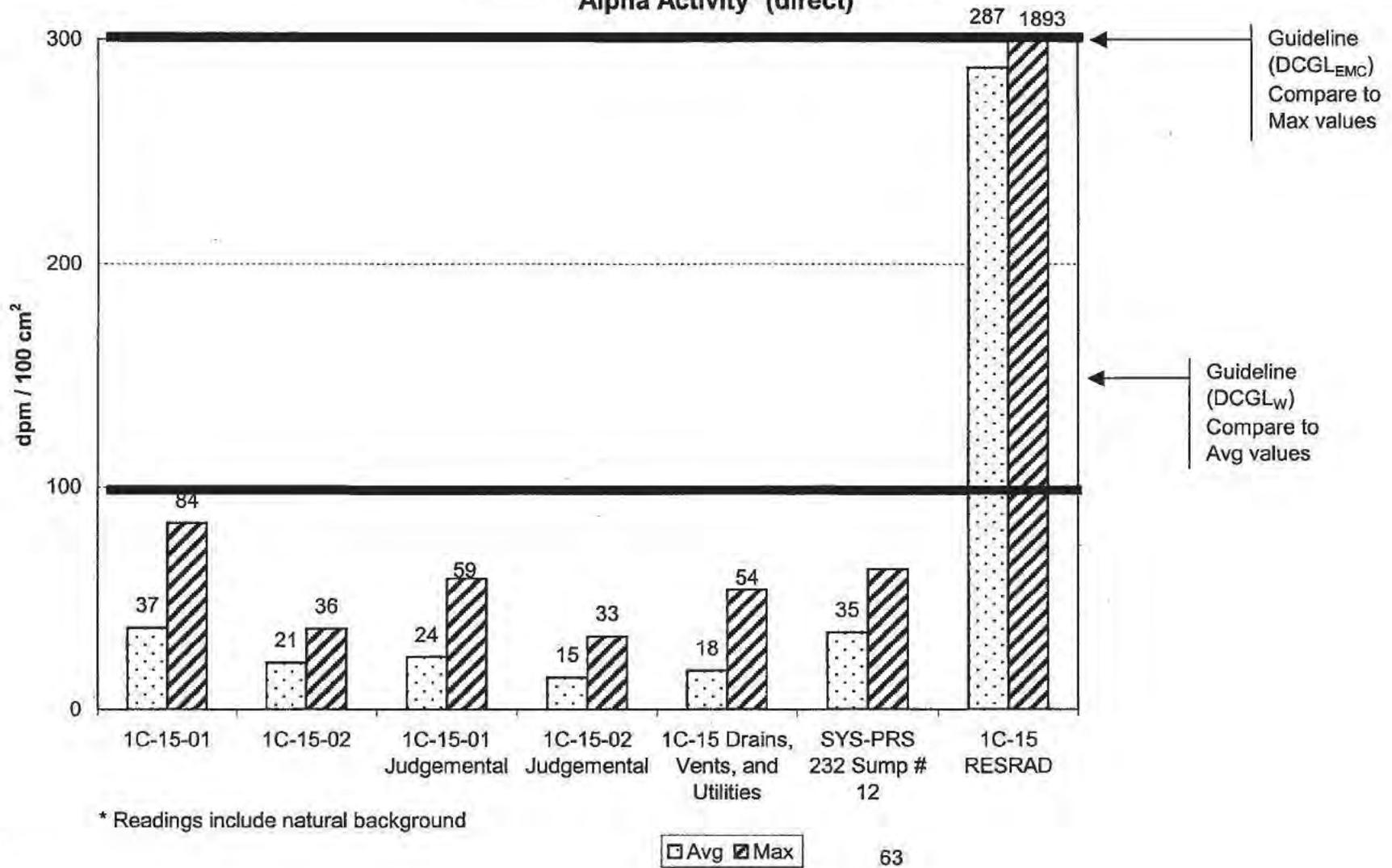
Allowable Total Residual Surface Contamination (dpm/100 cm ²) ⁽¹⁾			
Radionuclides ⁽²⁾	Average ^(3,4) (DCGL _w)	Maximum ^(5,6) (DCGL _{EMC})	Removable ⁽⁶⁾
Group 1: Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100	300	20
Group 2: Th-natural, Th-232, Sr-90, Ra-223, Ra-224, 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

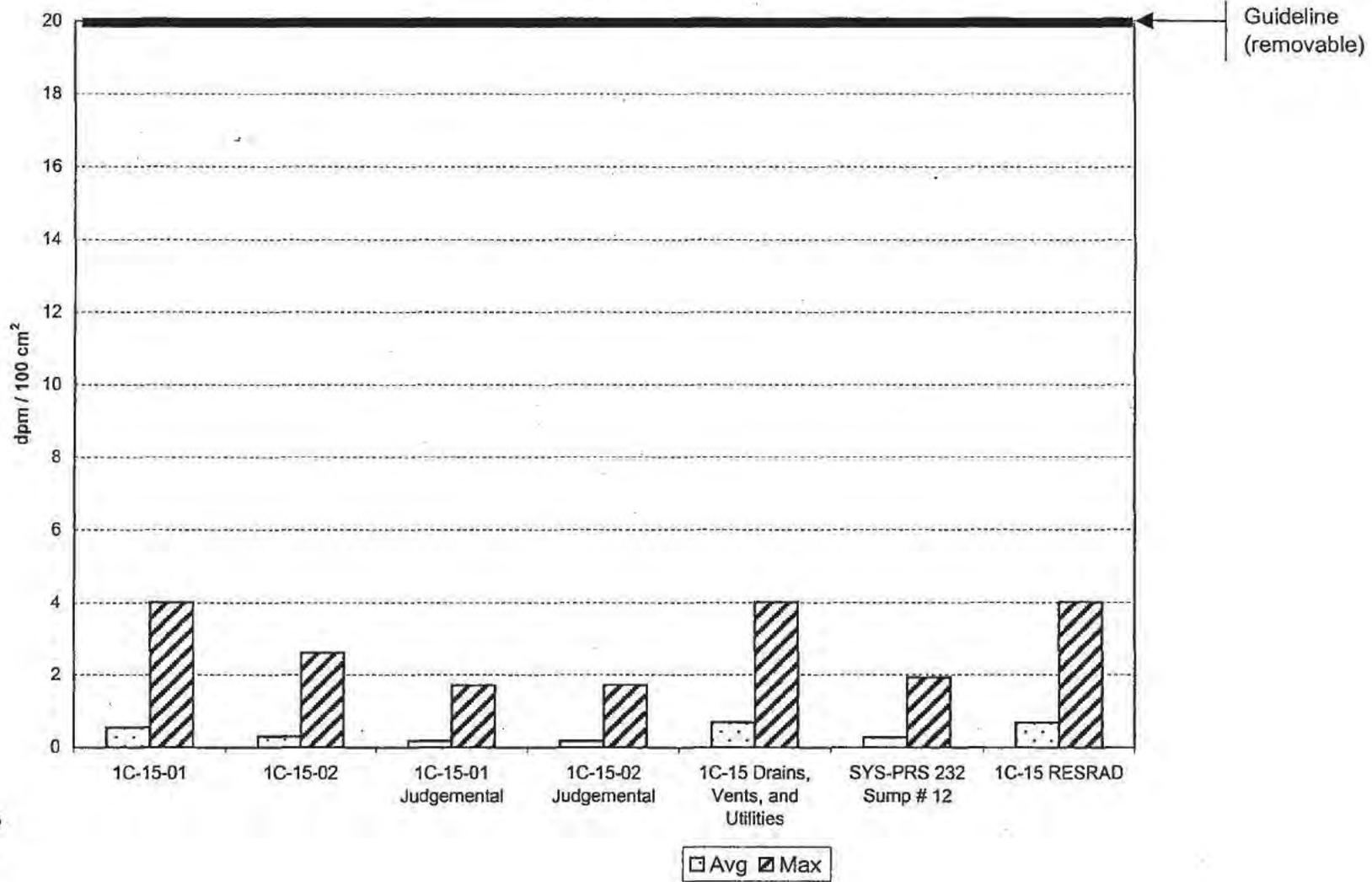
Attachment B
Direct and Removable Activity Graphs

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



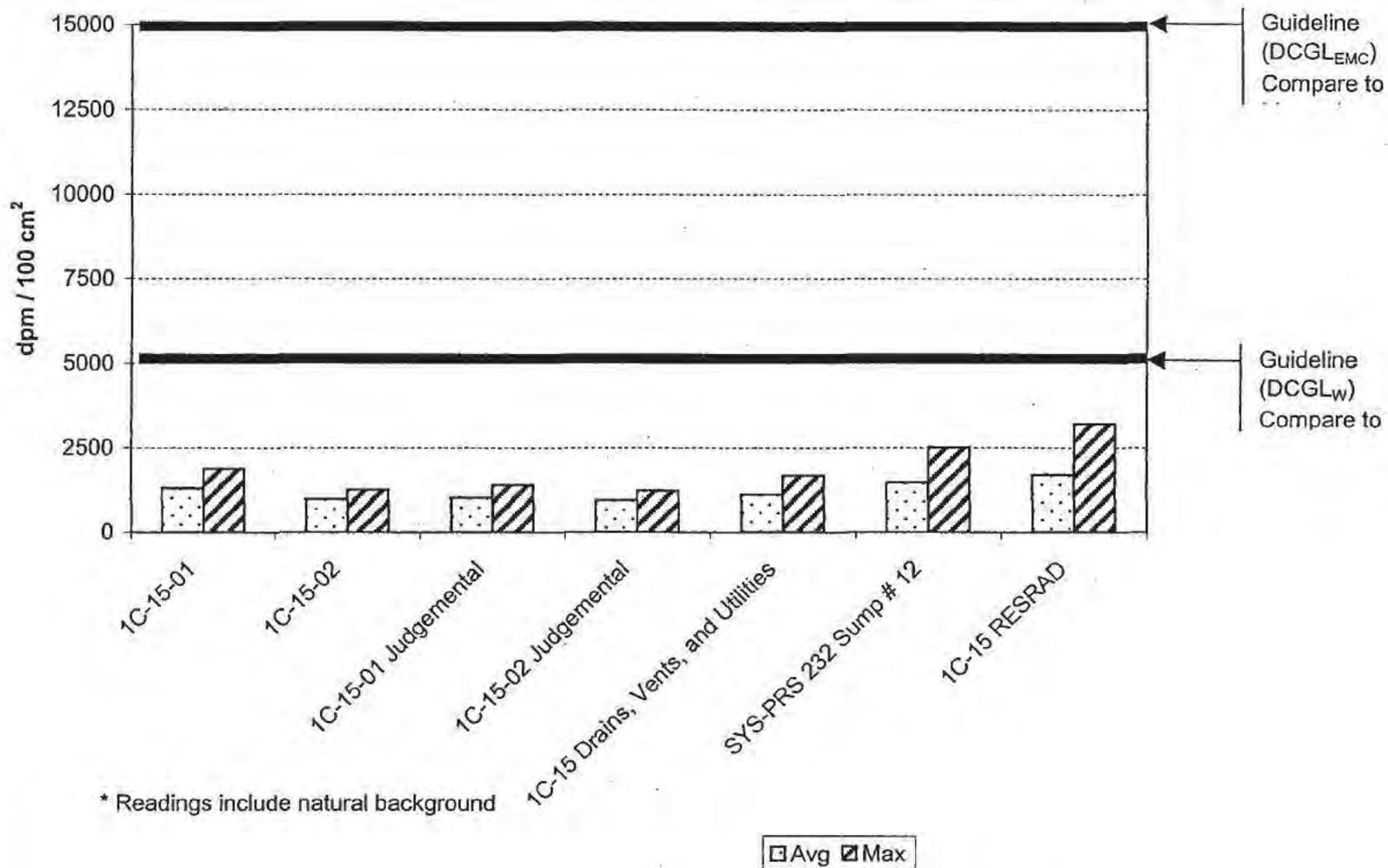
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Attachment B
Mound - T Building Final Status Survey
Alpha Activity (removable)



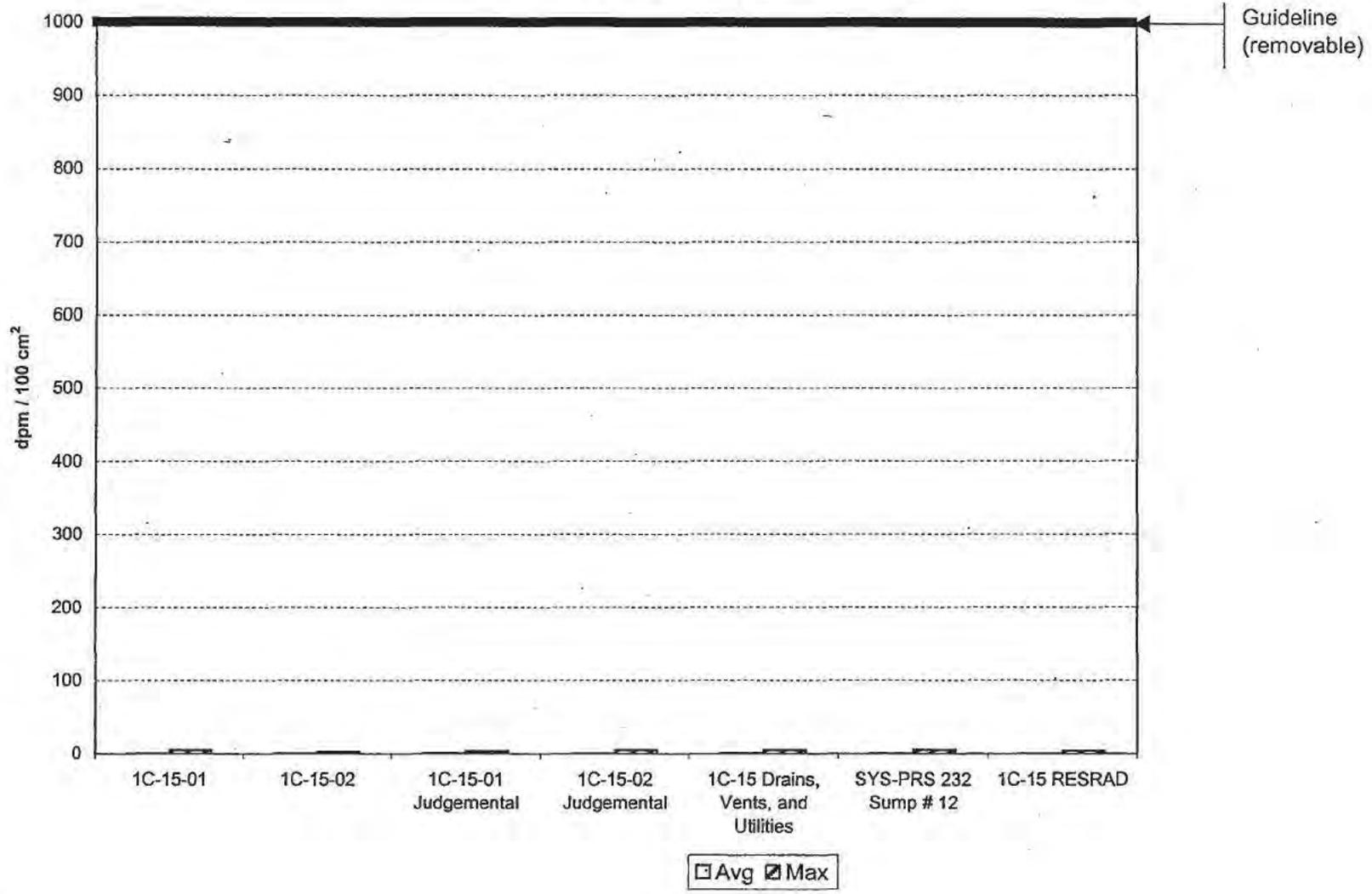
Ba/Po

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



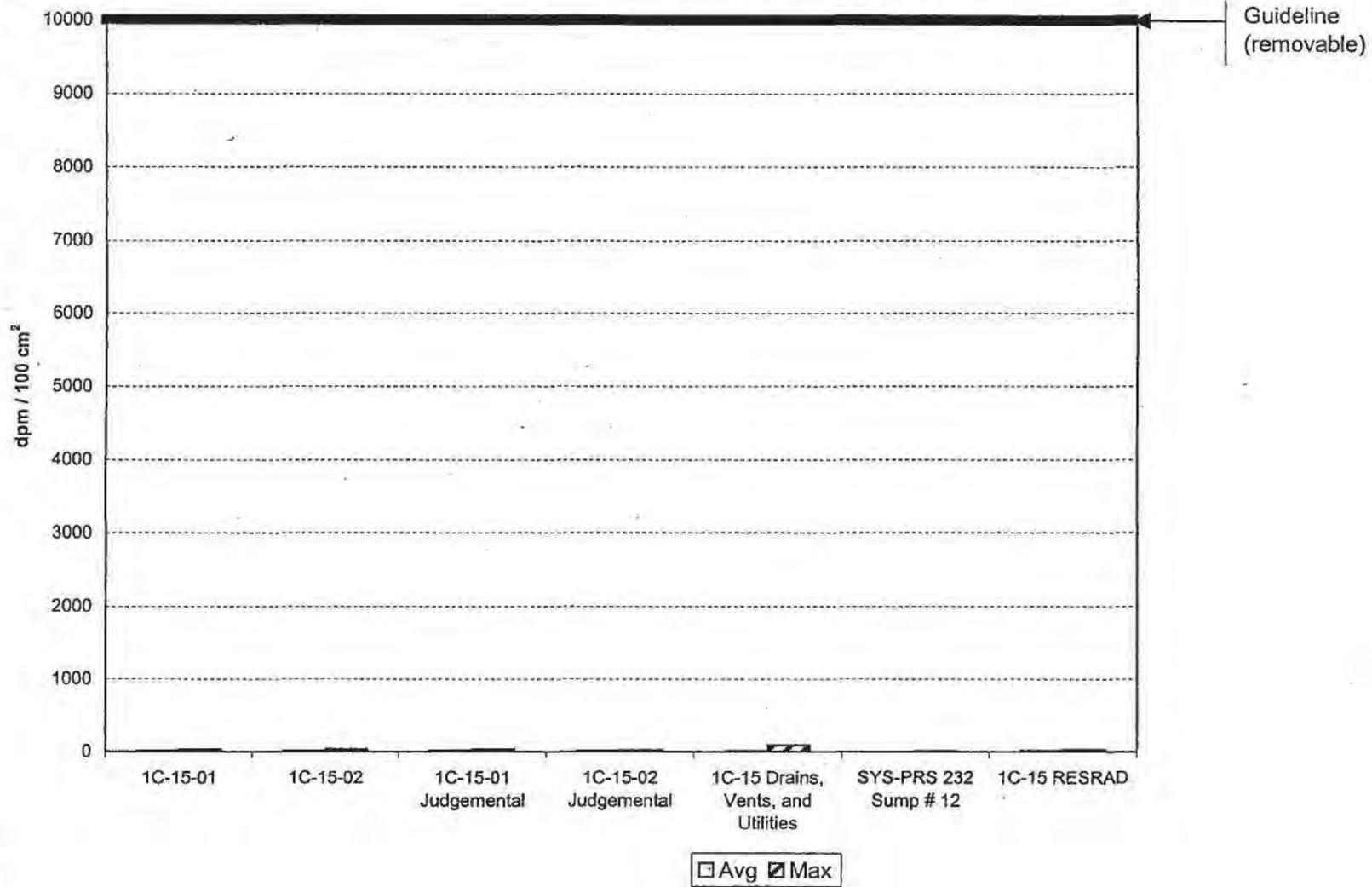
B3/10

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



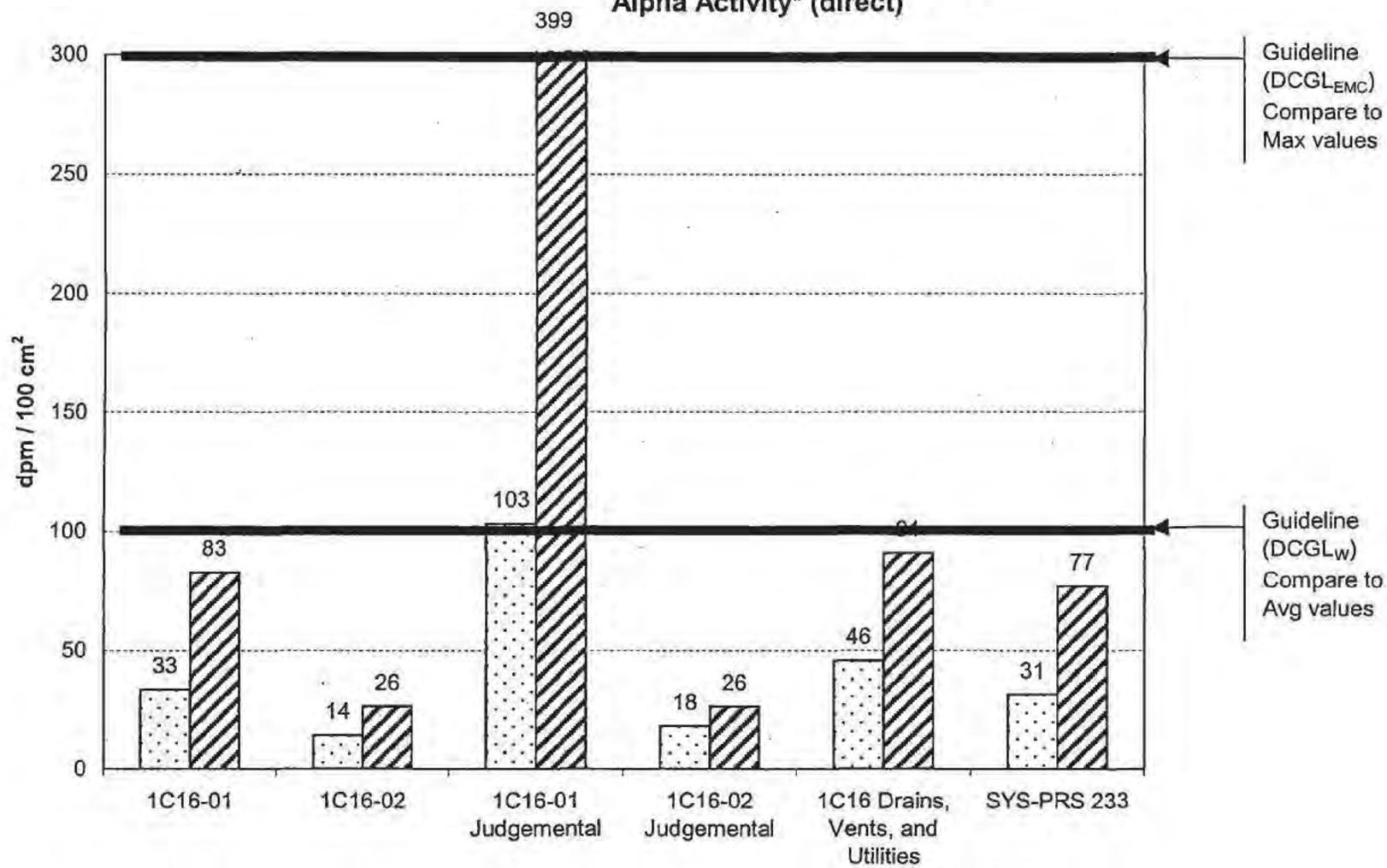
B4/10

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



BS/10

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

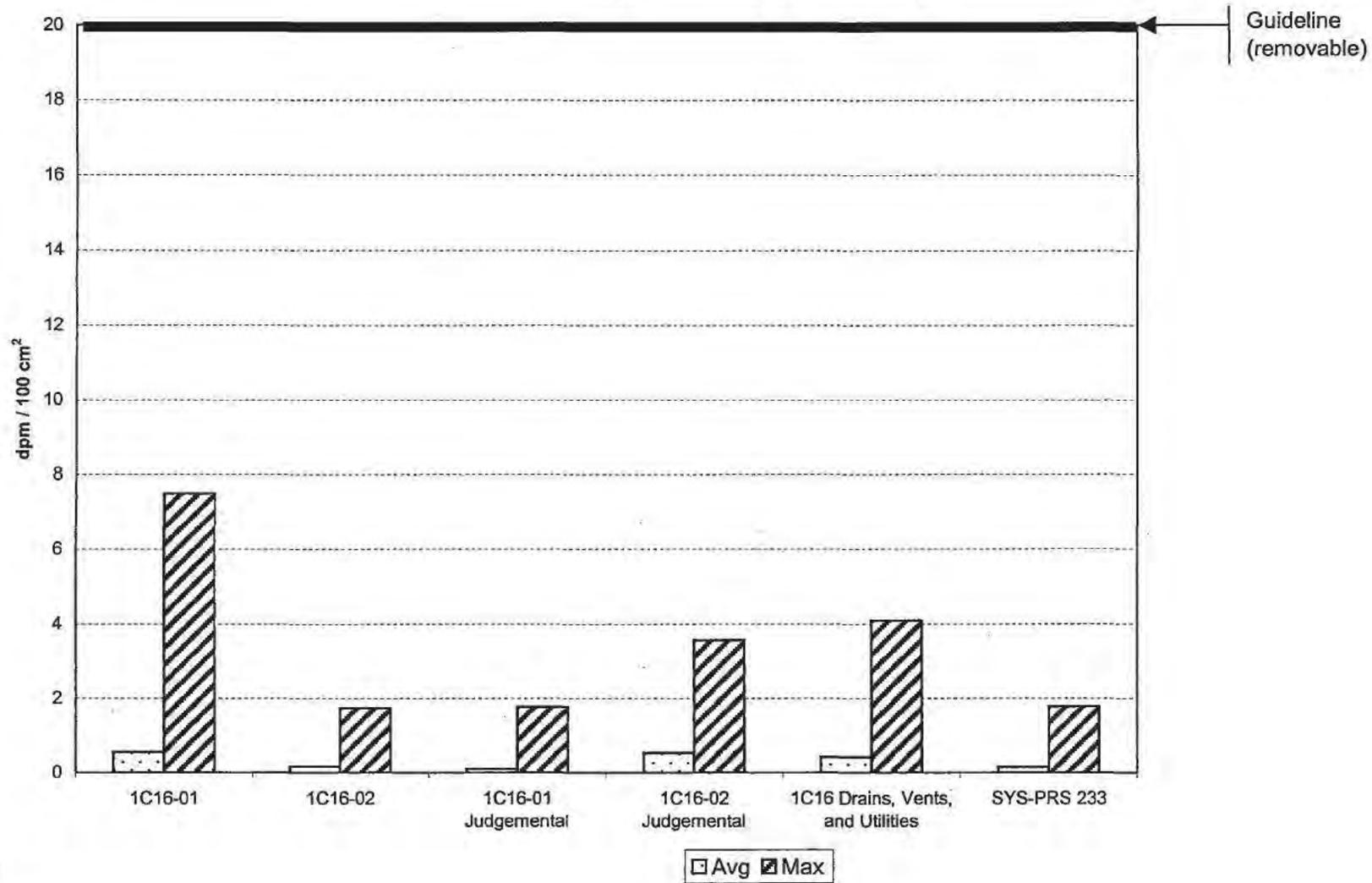


* Readings include natural background

□ Avg ▨ Max

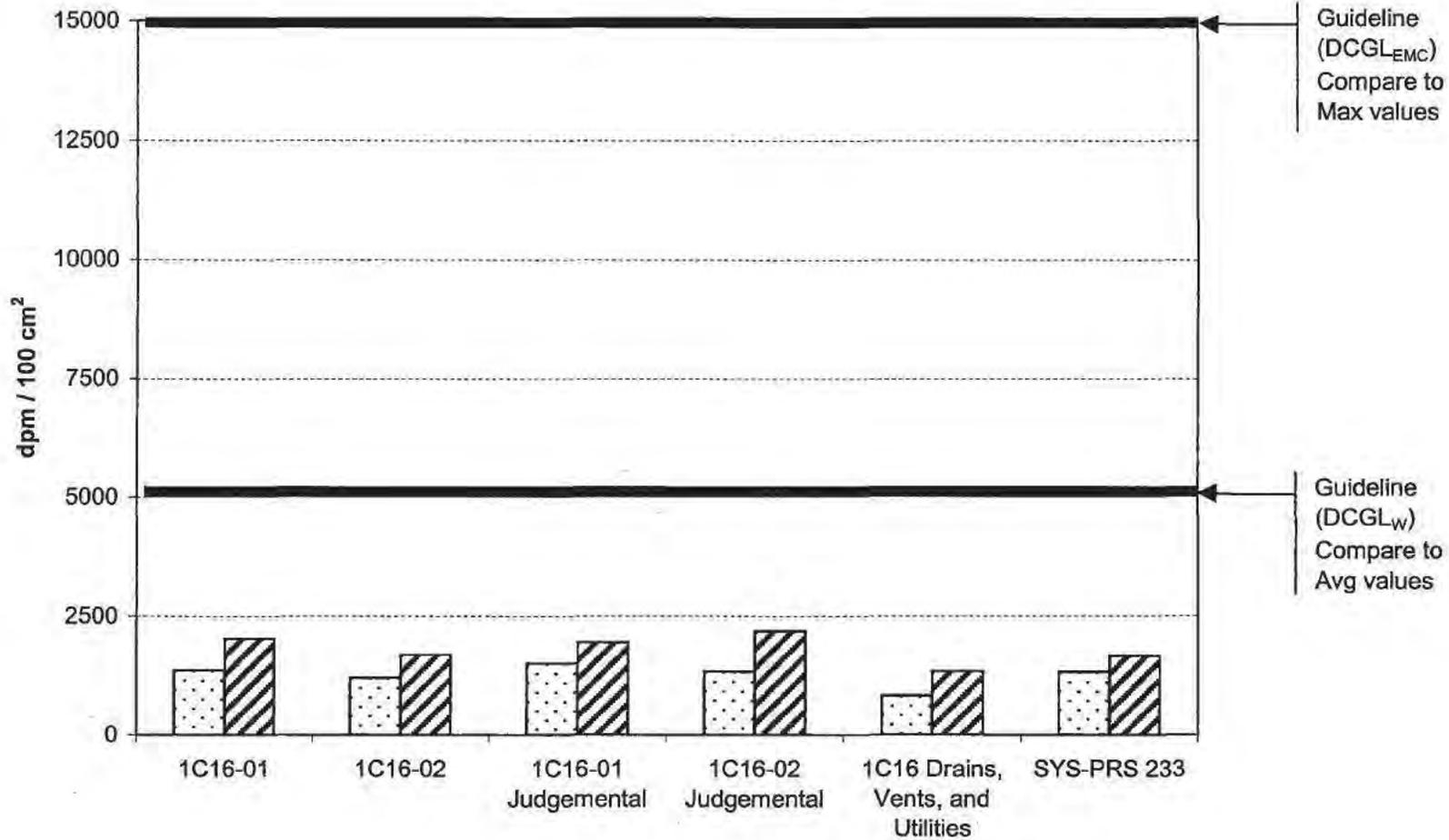
Be/10

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



B7110

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

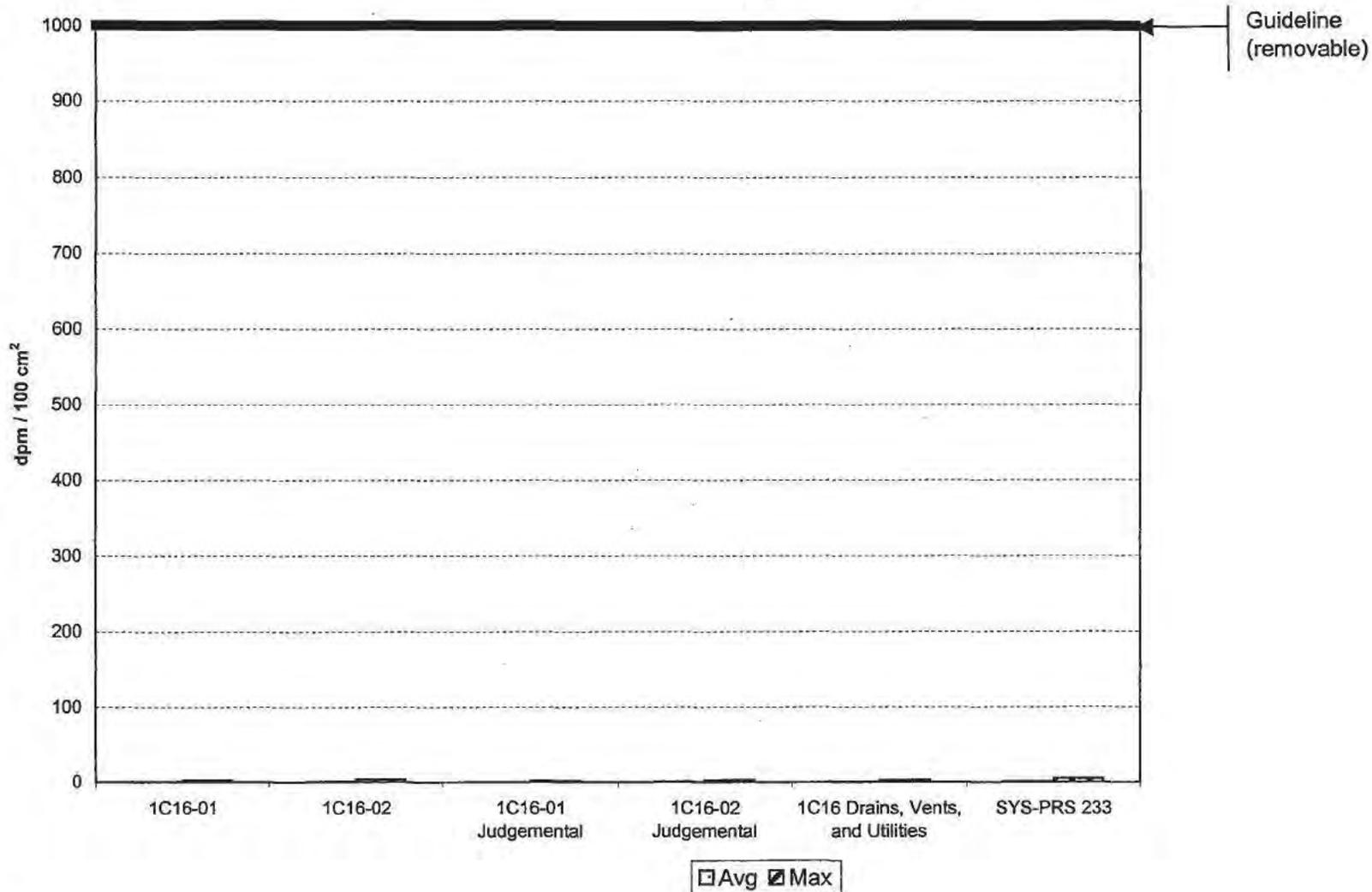


* Readings include natural background

□ Avg ▨ Max

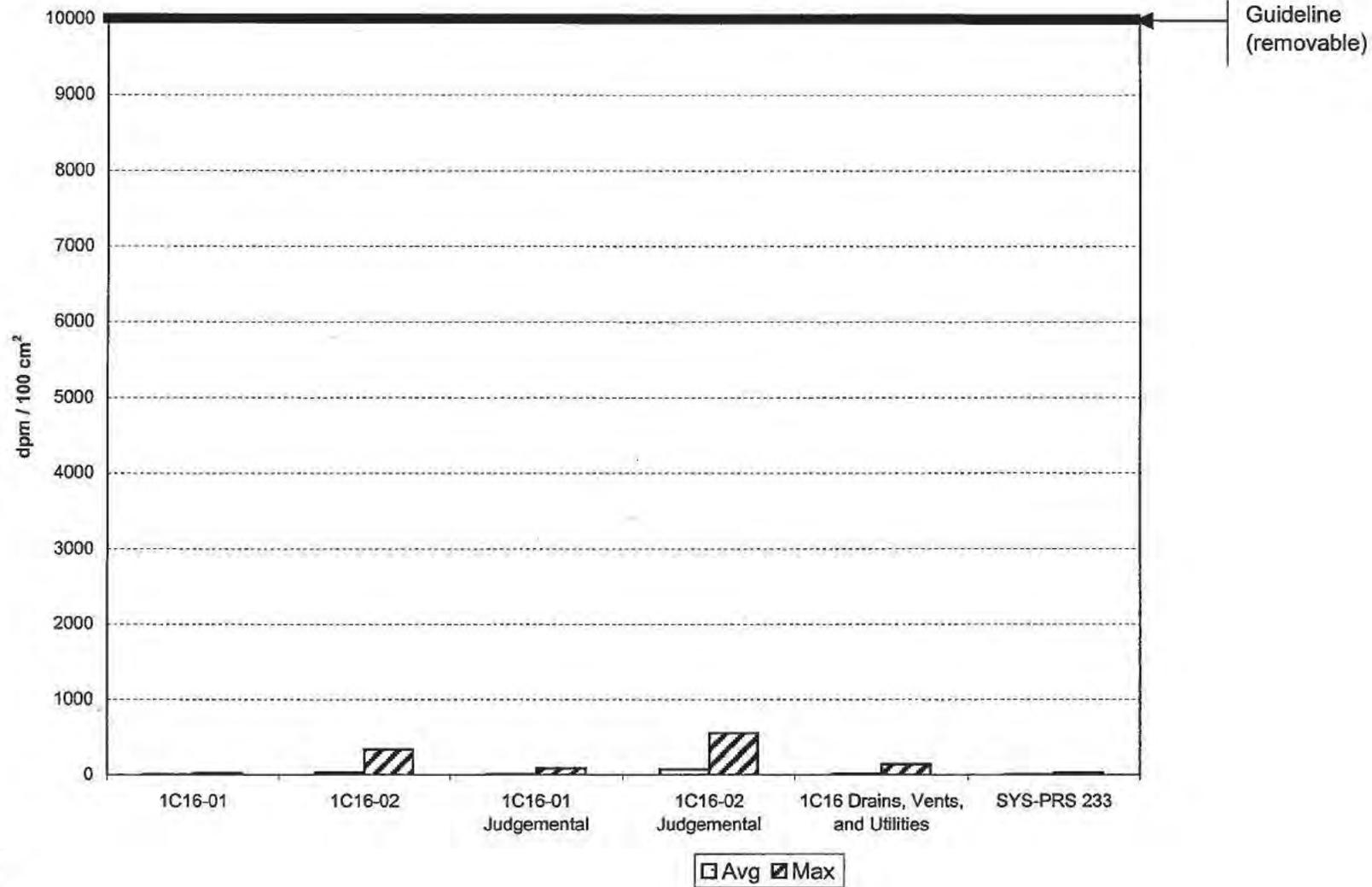
B8/10

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



B910

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



B10/10

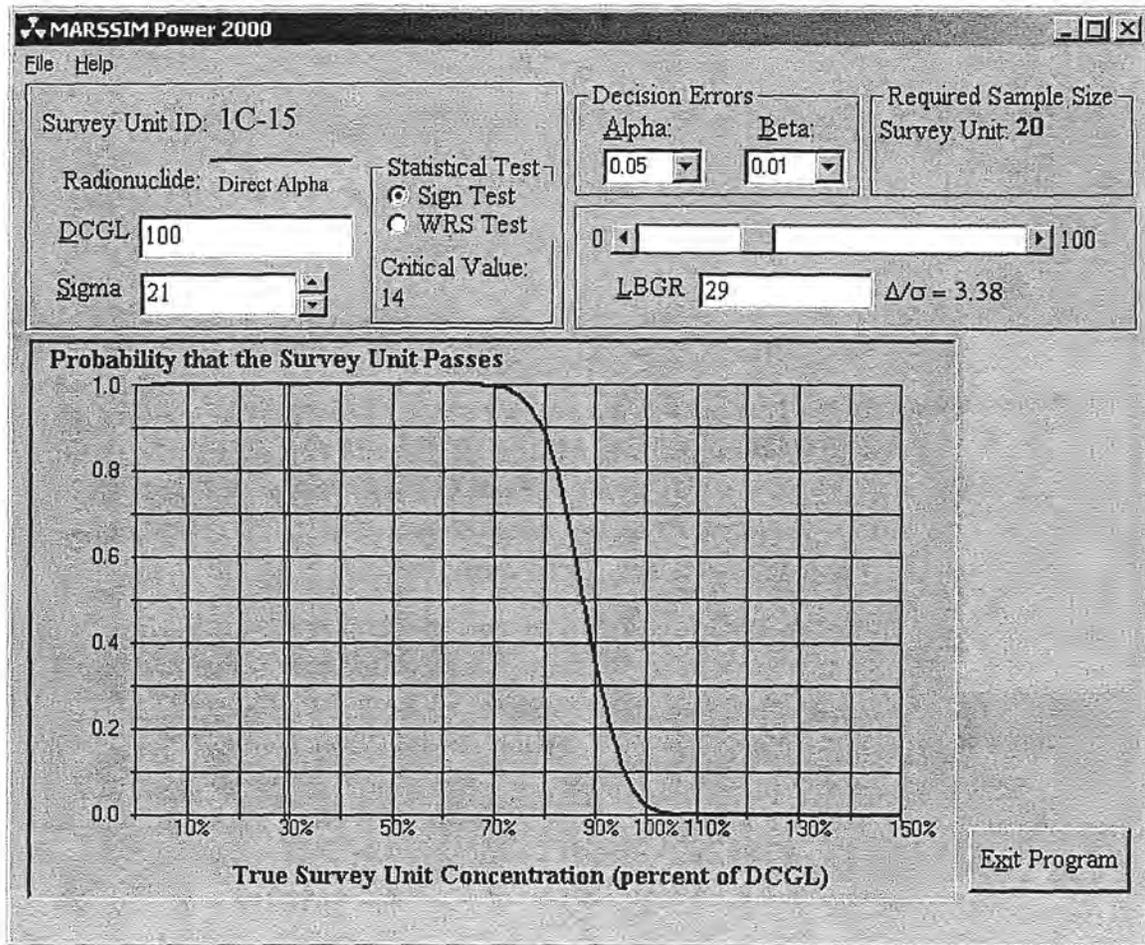
Attachment C

Retrospective Power Curves

Attachment C

Retrospective Power Curve

Direct Alpha

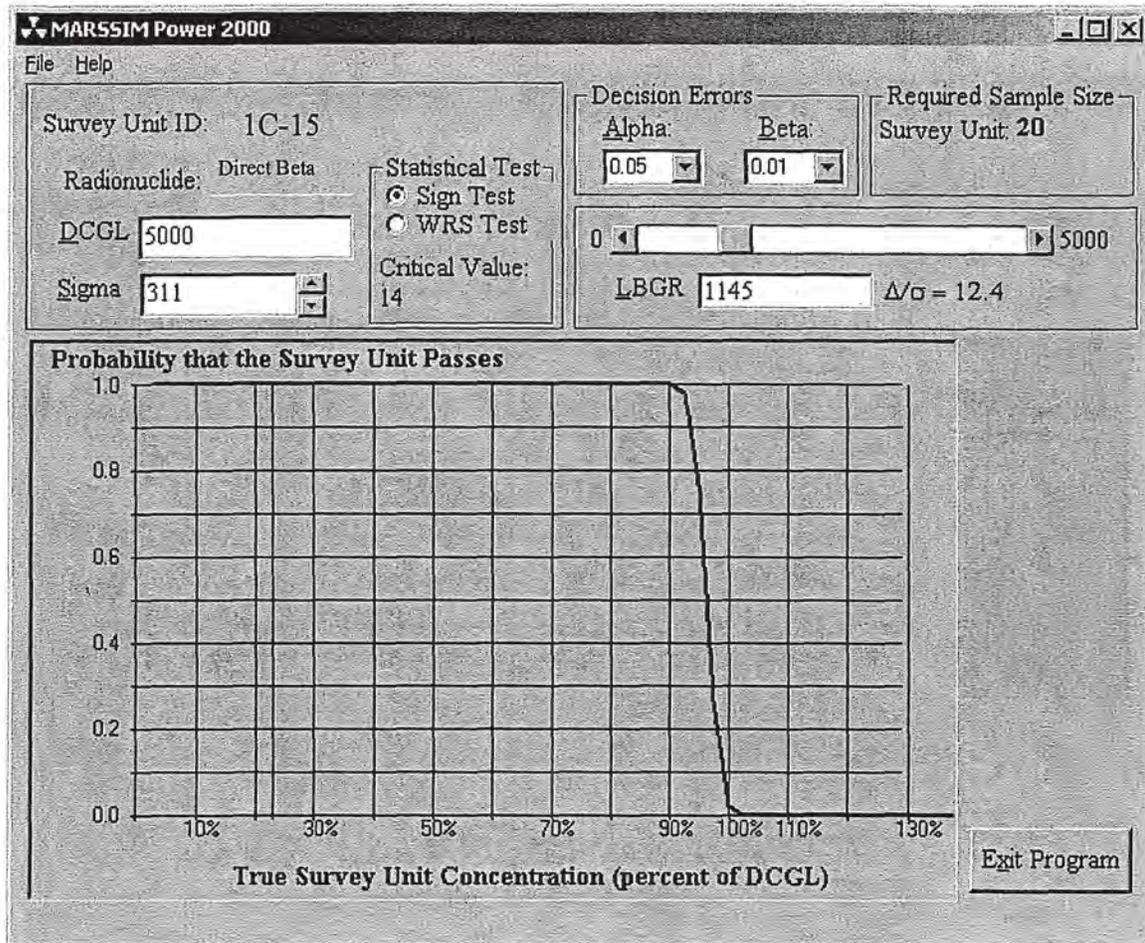


C1/10

Attachment C

Retrospective Power Curve

Direct Beta

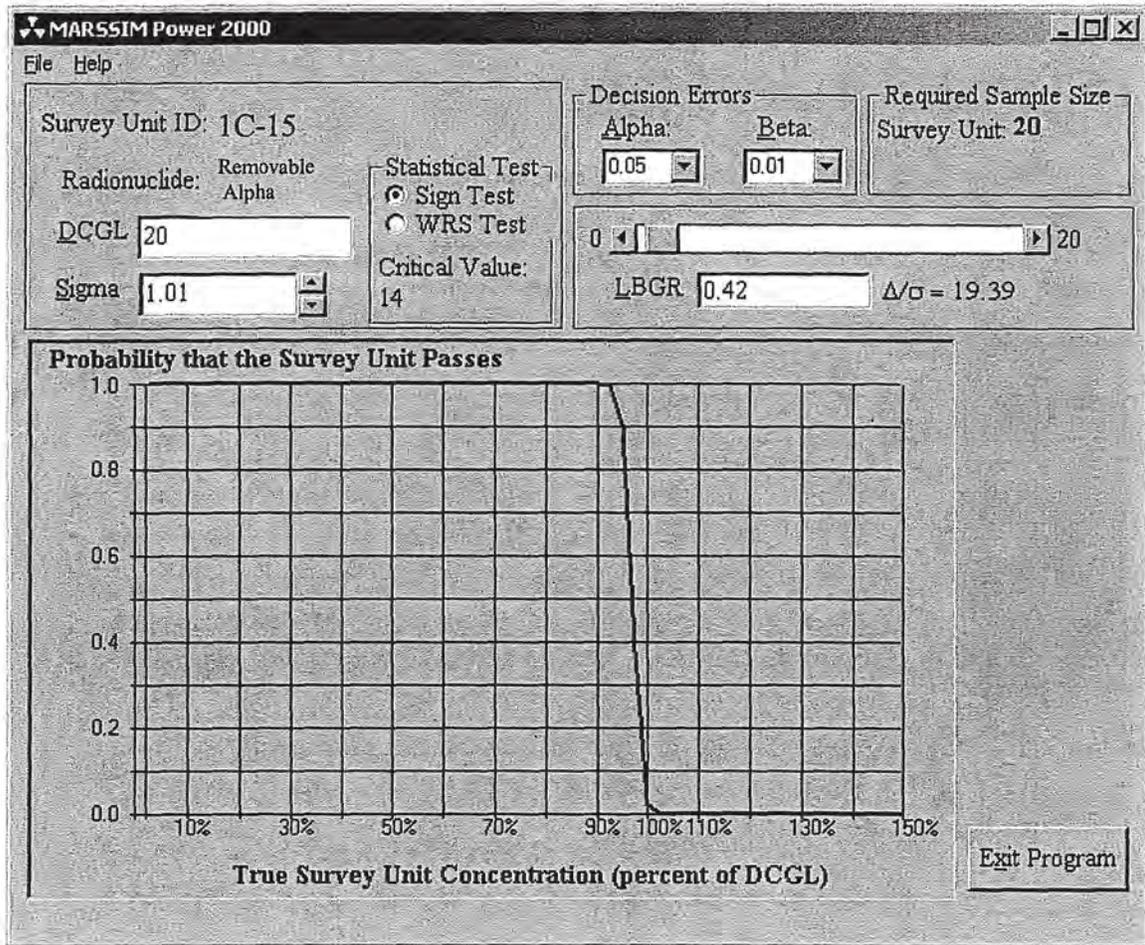


C2/10

Attachment C

Retrospective Power Curve

Removable Alpha

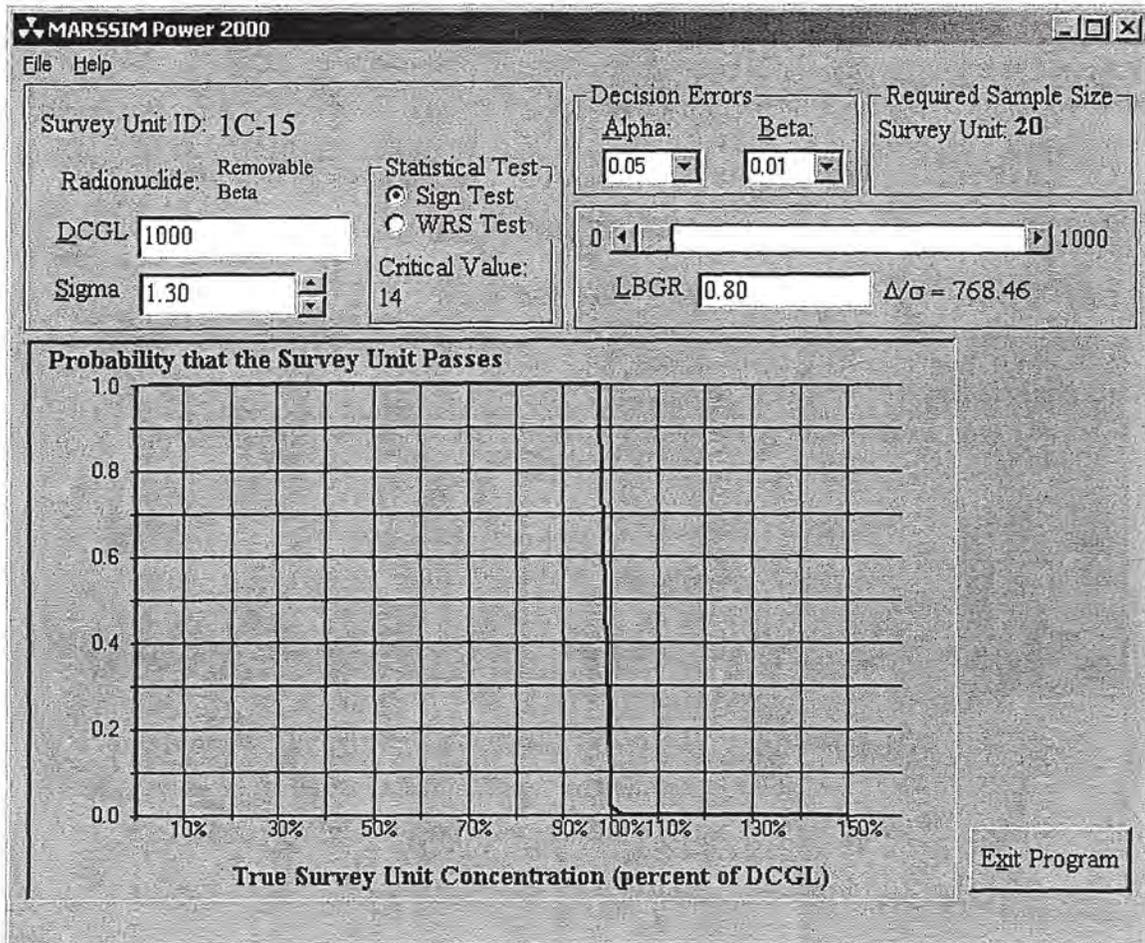


C3/10

Attachment C

Retrospective Power Curve

Removable Beta

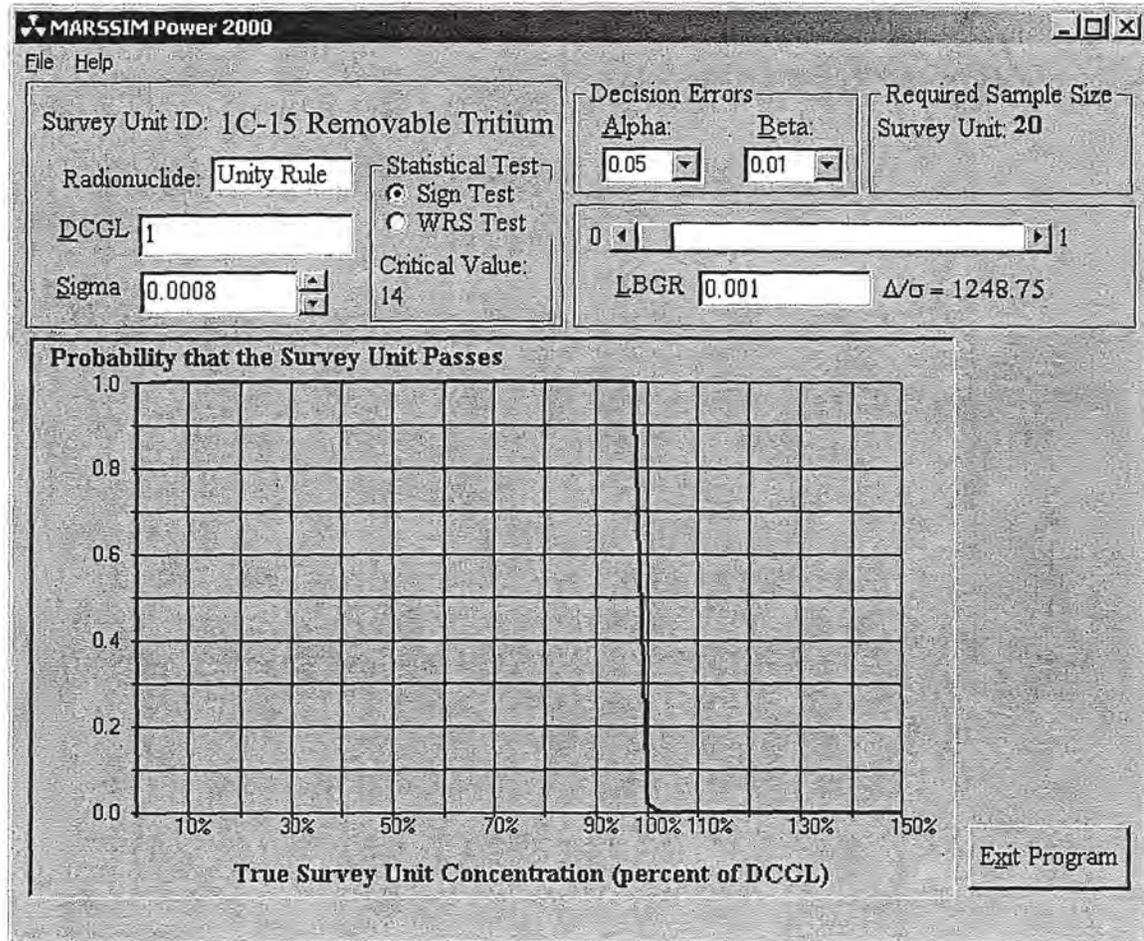


Cy/ro

Attachment C

Retrospective Power Curve

Removable Tritium



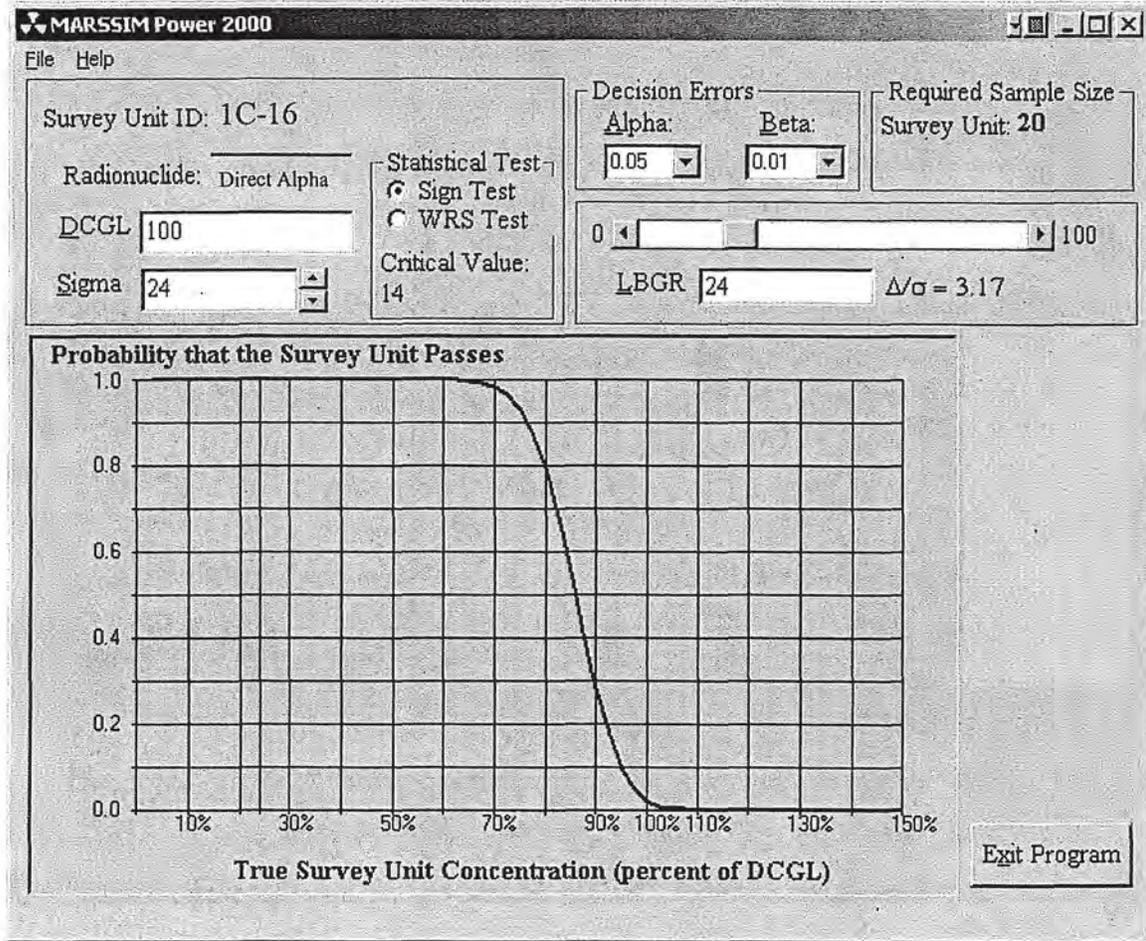
Note: The software program used to generate these power curves (MARSSIM Power 2000) fails to produce a legible curve when a large value, such as 10,000 is input as the DCGL. The curve depicted was generated by normalizing the LBGR and standard deviation (sigma) to the DCGL.

C5/10

Attachment C

Retrospective Power Curve

Direct Alpha

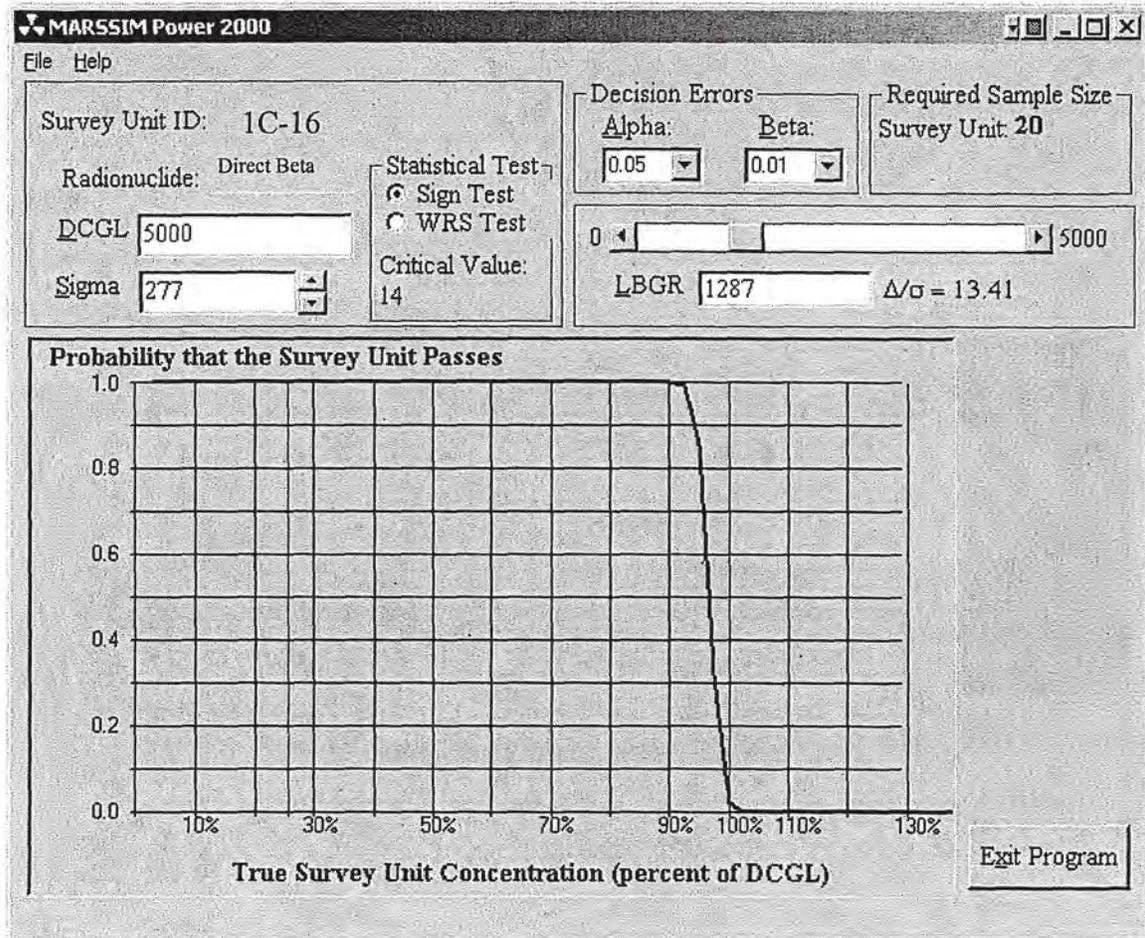


C6/10

Attachment C

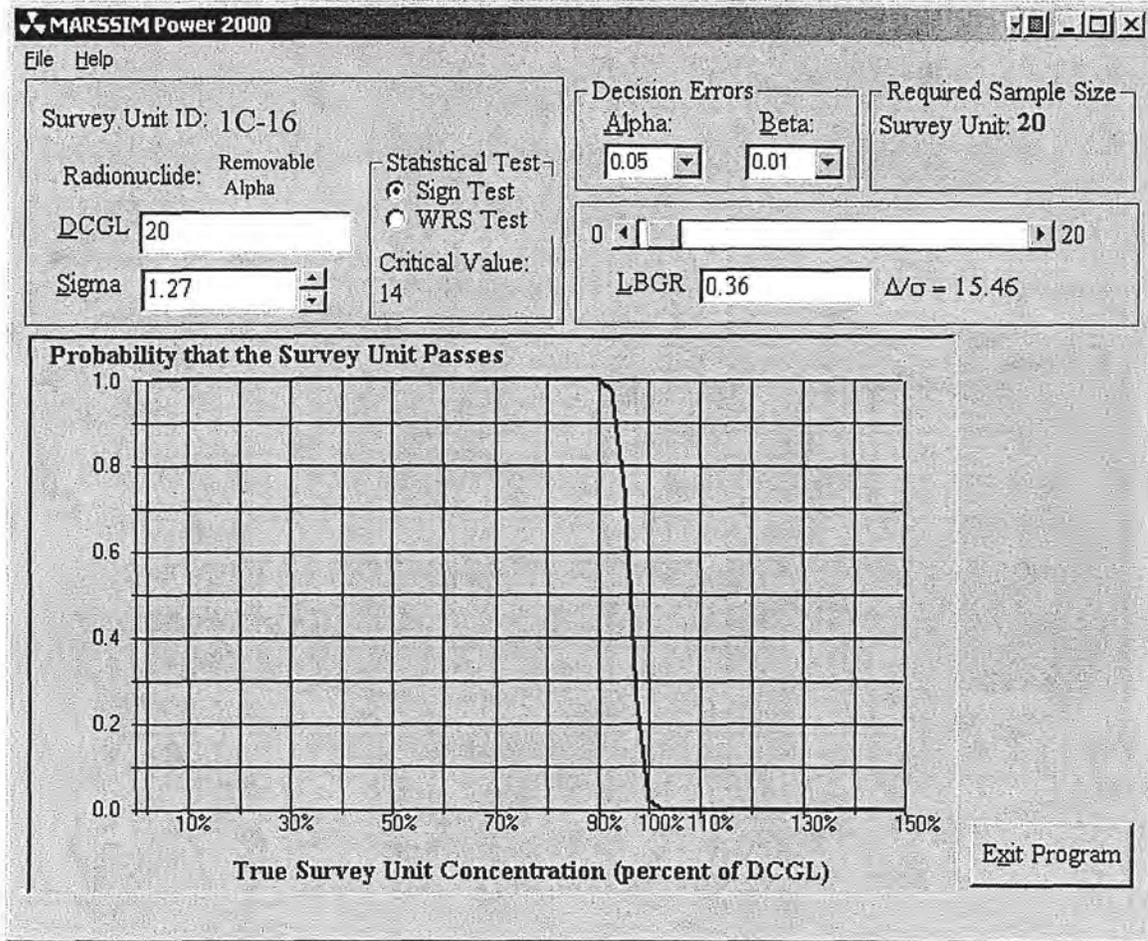
Retrospective Power Curve

Direct Beta



C-7/10

Attachment C Retrospective Power Curve Removable Alpha

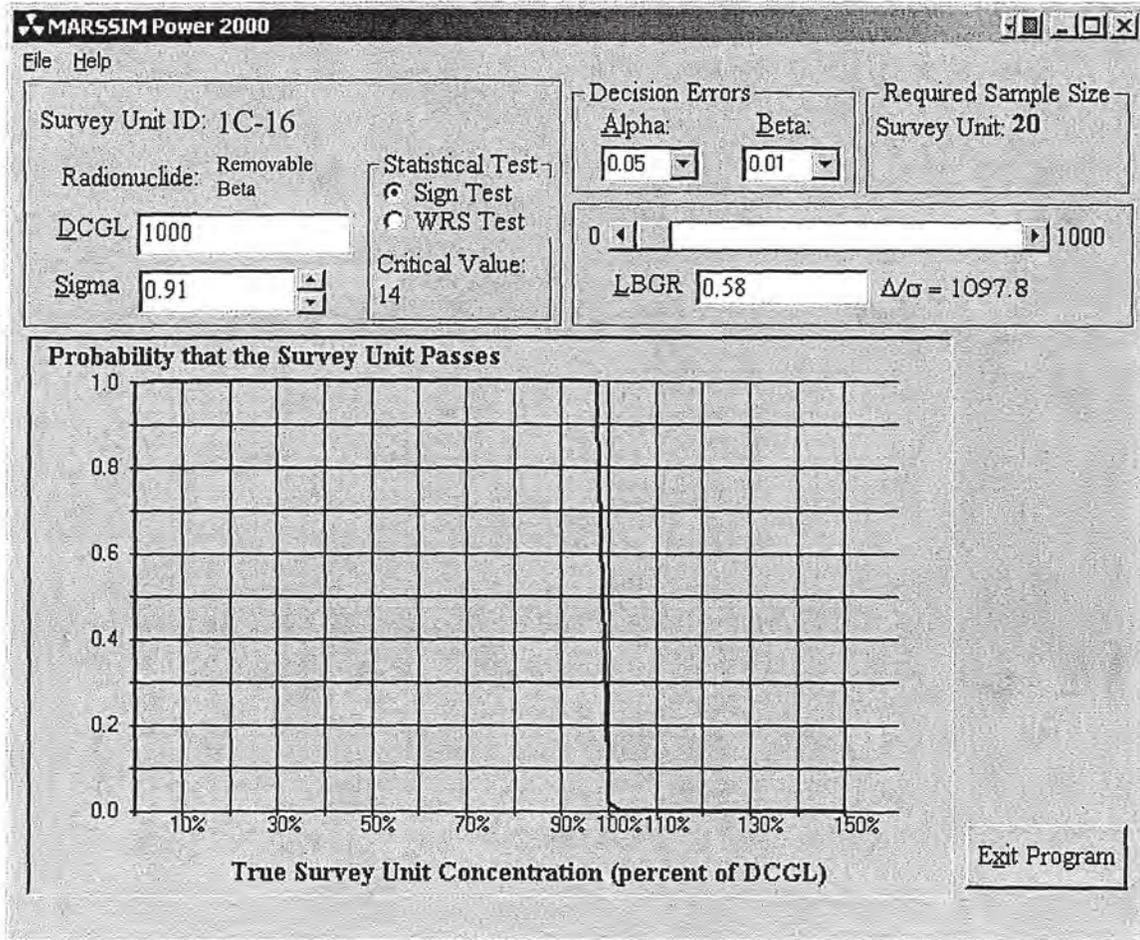


C8/10

Attachment C

Retrospective Power Curve

Removable Beta

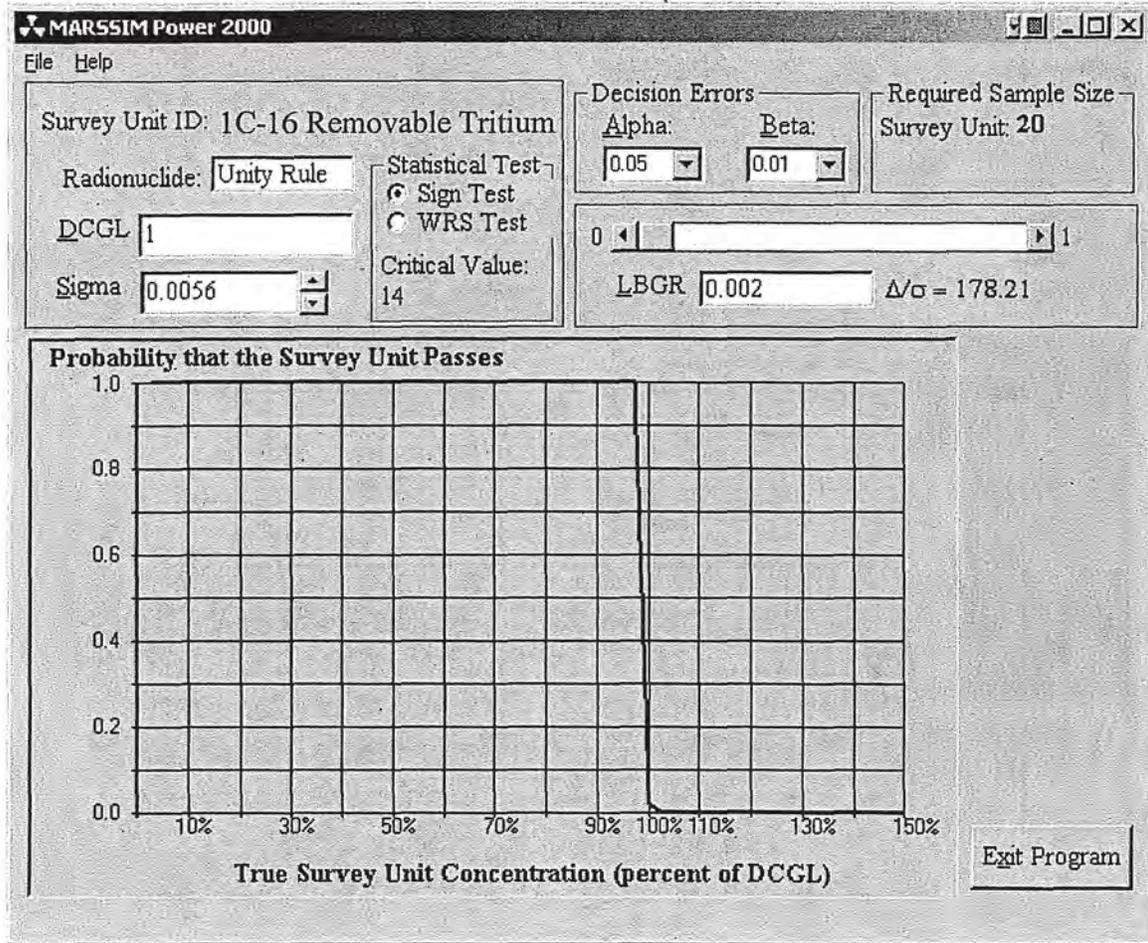


C9/10

Attachment C

Retrospective Power Curve

Removable Tritium



Note: The software program used to generate these power curves (MARSSIM Power 2000) fails to produce a legible curve when a large value, such as 10,000 is input as the DCGL. The curve depicted was generated by normalizing the LBGR and standard deviation (sigma) to the DCGL.

Attachment D
Data Analysis Worksheets

T Building rooms 61

MARSSIM classification Class 1

Historical use Room 61 was associated with the neutron source program and was later used in tritium production. Residual bulk contamination remains in the concrete floor. The contaminants of concern (COCs) are Am-241, Pu-238, Pu-239 and Cs-137. SYS-PRS 232 (Sump # 12) was a low-risk sump located between Room 61 and Corridor 7A. It was taken out of service and later removed from the building.

Survey description summary

gamma scan: sump – 100%

drain chases - 100%

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

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

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

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

22 each judgmental location measurements on drains, vents, and utilities.

20 each judgmental location measurements in the hole that previously held the sump, its steel liner, and in the drain chases that previously held the drains

36 direct alpha and beta measurements were taken on the floor in Room 61 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, 30 cm and from 1 meter above the floor at each of the 12 elevated areas in Room 61.

volumetric samples: A composite sample from 19 sample locations was collected and used to represent the average volumetric concentration for use in the RESRAD-Build dose models. Nine of the locations were selected at random and the other 10 were biased samples from the most highly elevated areas. The samples were collected by drilling 1" diameter holes into the concrete floor to a depth of 2.54 cm. The powder from these drillings was combined to form a single composite sample..

In the RESRAD-Build renovation scenario the activity found in the 2.54 cm composite sample is assumed to represent the activity concentration (pCi/g) in the concrete to a depth of 15 cm.

For the RESRAD-Build occupation scenario, the activity found in the 2.54 cm composite sample is again assumed to be representative of the contamination levels to a depth of 15 cm. In this scenario, however, all of the activity is modeled as being on the surface.

Composite samples from surface to 15 cm and 15 cm to 30 cm were collected to determine the extent of contamination.

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

gamma scan: no activity significantly above natural background detected

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 20A in Attachment D
potential radiation dose from building occupancy scenario: 0.88 mrem/yr

potential radiation dose from building renovation scenario: 1.65 mrem/yr

Treatment of elevated* measurements**

On RSDS MT-06-0454 no elevated measurements were detected in the hole that previously held sump # 12 (SYS-PRS 232). No further action required. The area previously occupied by Sump #12 is not included in the dose model.

Based on historical knowledge and analytical results the contamination in Room 61 was identified to be from the neutron source program. The alpha emitting contaminants of concern (COCs) are Am-241, Pu-238, Pu-239. The $DCGL_w$ for these radionuclides is 100 dpm/100 cm^2 and the $DCGL_{EMC}$ is 300 dpm/100 cm^2 . The beta/gamma emitting contaminant of concern (COC) is Cs-137. The $DCGL_w$ for these radionuclides is 5000 dpm/100 cm^2 and the $DCGL_{EMC}$ is 15,000 dpm/100 cm^2 . Multiple elevated alpha measurements were detected in the floor of Room 61, which exceed the $DCGL_{EMC}$ for gross alpha. Samples were collected from the floor at 2.54 cm, 15 cm, and 30 cm depths to determine the extent of volumetric contamination. It was determined that volumetric contamination exists within the top 15 cm of the

concrete floor. 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.

Naturally occurring radioactive materials (NORM) in building materials (e.g. Th-228, Th-230, 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. Laboratory MDA values were not used when non-COCs were reported at less than or equal to the MDA. Analytical information from the alpha spectroscopy reports for Lab ID#(s) 0600345 on page F51 and 0506376 on page F48 and gamma spectroscopy report for LAB ID# GL08742 on page F49 located in RSDS MT-05-1180 were used as input for the dose model. Analytical information from the gamma spectroscopy reports for LAB ID# (s) GL11171 on page F68, and GL11172 on page F69 located in RSDS MT-06-0346 were used to determine the depth of contamination.

The RESRAD-Build computer code was used to assess potential radiation dose to future building occupants in Room 61. 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). Since the potential doses from the building occupancy scenario (0.88 mrem/yr), and the building renovation scenario (1.65 mrem/yr) were all below 15 mrem/yr, excluding naturally occurring radioactive materials (NORM), no further action was required.

*** 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.

Note: See pages D31 and D40 for computed dose values.

Calculations 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 D58A – D58B.

Conclusion Survey units meet the release criteria.

Attachment D
Mound - T Building Survey Unit 1C-15 and SYS-PRS 232
Data Analysis Worksheet

1C-15-01 (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	0.54	0.91	9	37	1316
StDev	1.22	1.52	8	26	306
Max	4.01	5.14	29	84	1888

1C-15-02 (21 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	0.30	0.69	11	21	983
StDev	0.77	1.07	9	9	217
Max	2.61	3.04	29	36	1274

1C-15-01 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	0.17	1.00	13	24	1032
StDev	0.54	1.47	9	19	208
Max	1.72	4.18	29	59	1410

1C-15-02 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	0.17	0.75	10	15	958
StDev	0.55	1.62	5	9	189
Max	1.73	5.13	18	33	1242

1C-15 Drains, Vents, and Utilities (22 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	0.70	1.14	11	18	1124
StDev	1.21	1.62	21	12	258
Max	4.02	5.28	93	54	1695

1C-15 Statistical Data Points (41 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	41	41	41	41	41
Average	0.42	0.80	10	29	1145
StDev	1.01	1.30	8	21	311
Max	4.01	5.14	29	84	1888

SYS-PRS 232 Sump # 12 (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	0.27	0.81	1	35	1478
StDev	0.67	1.29	2	12	524
Max	1.93	5.48	8	63	2519

1C-15 RESRAD (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	0.68	0.64	13	287	1714
StDev	1.17	1.14	7	470	523
Max	4.01	4.49	29	1893	3204

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Attachment D
Mound T - Building
Survey Unit 1C-15 and SYS-PRS 232
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
1C-15-01 (20 samples each)	1C150101S	05-1013	0.00	0.99	3	80	1191
	1C150102S	05-1013	3.55	0.00	29	58	1695
	1C150103S	05-1013	0.00	4.49	9	73	1732
	1C150104S	05-1013	0.00	0.00	16	62	1576
	1C150105S	05-1013	0.00	0.54	19	51	1695
	1C150106S	05-1013	0.00	0.00	13	84	1439
	1C150107S	05-1013	0.00	0.31	10	15	1026
	1C150108S	05-1013	0.00	0.00	12	22	1136
	1C150109S	05-1013	1.69	0.11	14	22	1201
	1C150110S	05-1013	0.00	0.47	2	11	1136
	1C150111S	05-1013	0.00	2.70	9	18	816
	1C150112S	05-1013	0.00	0.00	0	18	1201
	1C150113S	05-1013	0.00	1.54	5	18	1283
	1C150114S	05-1013	0.00	0.00	3	18	1191
	1C150115S	05-1013	0.00	0.00	2	15	1164
	1C150116S	05-1013	0.00	0.20	8	22	1036
	1C150117S	05-1013	0.00	0.00	3	4	1338
	1C150118S	05-1013	1.57	0.00	0	26	871
	1C150119S	05-1013	4.01	1.62	4	69	1705
	1C150120S	05-1013	0.00	5.14	26	51	1888
1C-15-02 (21 samples each)	1C150201S	06-0488	1.96	0.00	13	4	704
	1C150202S	06-0488	0.00	0.36	24	15	833
	1C150203S	06-0488	0.00	1.55	29	34	1181
	1C150204S	06-0488	0.00	0.00	23	19	704
	1C150205S	06-0488	0.00	0.00	10	34	605
	1C150206S	06-0488	0.00	0.48	12	23	645
	1C150207S	06-0488	0.00	0.27	26	30	813
	1C150208S	06-0488	0.00	3.04	12	8	794
	1C150209S	06-0488	0.00	0.00	1	15	942
	1C150210S	06-0488	0.00	2.78	2	19	982
	1C150211S	05-1013	2.61	0.00	0	33	880
	1C150212S	05-1013	0.00	0.00	4	22	1274
	1C150213S	05-1013	0.00	2.95	7	26	953
	1C150214S	05-1013	0.00	0.00	20	22	1045
	1C150215S	05-1013	0.00	0.00	9	15	1109
	1C150216S	05-1013	0.00	0.00	9	7	1237
	1C150217S	05-1013	1.73	0.12	8	22	1265
	1C150218S	05-1013	0.00	0.00	13	29	1182
	1C150219S	05-1013	0.00	0.00	0	15	1210
	1C150220S	05-1013	0.00	1.58	5	18	1182
	1C150221S	05-1013	0.00	1.42	9	36	1100

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Attachment D
Mound T - Building
Survey Unit 1C-15 and SYS-PRS 232
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
1C-15-01 Judgemental (10 samples each)	1C150101J	06-0109	1.72	1.60	29	59	1410
	1C150102J	06-0109	0.00	2.67	15	48	1092
	1C150103J	06-0109	0.00	4.18	10	40	1307
	1C150104J	06-0109	0.00	0.00	26	4	1036
	1C150105J	06-0109	0.00	0.04	14	11	896
	1C150106J	06-0109	0.00	0.00	14	15	1074
	1C150107J	06-0109	0.00	1.52	5	11	971
	1C150108J	06-0109	0.00	0.00	4	15	868
	1C150109J	06-0109	0.00	0.00	11	7	952
	1C150110J	06-0109	0.00	0.00	3	26	710
1C-15-02 Judgemental (10 samples each)	1C150201J	06-0109	0.00	5.13	9	7	962
	1C150202J	06-0109	0.00	0.00	18	18	1242
	1C150203J	06-0109	1.73	0.00	5	33	728
	1C150204J	06-0109	0.00	1.58	5	22	682
	1C150205J	06-0109	0.00	0.00	12	4	1083
	1C150206J	06-0109	0.00	0.20	18	7	1167
	1C150207J	06-0109	0.00	0.00	8	7	962
	1C150208J	06-0109	0.00	0.00	5	11	1083
	1C150209J	06-0109	0.00	0.00	5	18	803
	1C150210J	06-0109	0.00	0.62	10	18	850
1C-15 Drains, Vents, and Utilities (22 samples each)	1C150101D	05-0588	0.00	0.00	8	31	908
	1C150101U	05-0588	1.73	0.00	0	19	938
	1C150102D	05-0588	0.00	0.31	9	54	1128
	1C150102U	05-0588	0.00	0.00	1	4	879
	1C150103D	05-0588	0.00	0.37	0	31	1118
	1C150104D	05-0588	0.00	0.00	2	31	1228
	1C150201D	05-0588	0.00	0.00	0	19	958
	1C150201U	05-0588	0.00	5.28	0	12	978
	1C150201V	05-0588	1.74	2.12	7	15	869
	1C150202U	05-0588	1.74	0.24	0	15	1098
	1C150202V	05-0588	0.00	0.42	10	8	1008
	1C150203U	05-0588	0.00	1.42	0	27	839
	1C150203V	05-0588	4.02	0.36	9	0	918
	1C150204U	05-0588	0.00	0.00	2	7	1659
	1C150204V	05-0588	0.00	2.73	93	19	849
	1C150205U	05-0588	0.00	0.00	3	7	1695
	1C150205V	05-0588	0.77	0.33	19	27	1308
	1C150206U	05-0588	3.55	1.26	32	7	1439
	1C150207U	05-0588	1.77	0.00	31	18	1530
	1C150208U	05-0588	0.00	5.14	12	7	1201
	1C150209U	05-0588	0.00	2.91	10	7	1054
	1C150210U	05-0588	0.00	2.13	0	18	1118

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Attachment D
Mound T - Building
Survey Unit 1C-15 and SYS-PRS 232
Data Analysis Worksheet

	Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
SYS-PRS 232 Sump # 12 (20 samples each)	2320101J	06-0454	0.00	0.00	2	63	852
	2320102J	06-0454	0.00	0.36	0	22	805
	2320103J	06-0454	0.00	0.30	1	34	946
	2320104J	06-0454	0.00	0.58	3	34	890
	2320105J	06-0454	0.00	0.00	0	22	1105
	2320106J	06-0454	0.00	0.00	0	34	843
	2320107J	06-0454	0.00	5.48	0	52	1096
	2320108J	06-0454	0.00	0.00	5	34	1189
	2320109J	06-0454	0.00	0.28	0	22	1227
	2320110J	06-0454	1.93	1.36	2	45	1180
	2320111J	06-0454	0.00	0.00	8	22	1573
	2320112J	06-0454	0.00	1.57	5	41	1864
	2320113J	06-0454	0.00	0.00	0	26	2023
	2320114J	06-0454	1.61	0.00	0	34	1948
	2320115J	06-0454	0.00	1.71	1	41	1957
	2320116J	06-0454	0.00	1.58	0	56	2519
	2320117J	06-0454	0.00	1.53	0	37	1985
	2320118J	06-0454	1.93	0.00	0	34	1545
2320119J	06-0454	0.00	1.50	1	22	2032	
2320120J	06-0454	0.00	0.00	0	19	1985	

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Attachment D
Mound T - Building
Survey Unit 1C-15 and SYS-PRS 232
Data Analysis Worksheet

Location	RSDS	Removable (dpm/100cm ²)			Direct (dpm/100cm ²)	
		a	b	H	a	b
1C150101S	05-1013	0.00	0.99	3	80	1191
1C150102S	05-1013	3.55	0.00	29	58	1695
1C150103S	05-1013	0.00	4.49	9	73	1732
1C150104S	05-1013	0.00	0.00	16	62	1576
1C150105S	05-1013	0.00	0.54	19	51	1695
1C150106S	05-1013	0.00	0.00	13	84	1439
1C150118S	05-1013	1.57	0.00	0	26	871
1C150119S	05-1013	4.01	1.62	4	69	1705
1C150101X	05-1153	n/a	n/a	n/a	412	1781
1C150102X	05-1153	n/a	n/a	n/a	214	1771
1C150103X	05-1153	n/a	n/a	n/a	1629	1936
1C150104X	05-1153	n/a	n/a	n/a	1213	1578
1C150105X	05-1153	n/a	n/a	n/a	72	1916
1C150106X	05-1153	n/a	n/a	n/a	645	3000
1C150107X	05-1153	n/a	n/a	n/a	1893	3204
1C150108X	05-1153	n/a	n/a	n/a	996	1839
1C150109X	05-1153	n/a	n/a	n/a	614	1791
1C150110X	05-1153	n/a	n/a	n/a	717	1829
1C150101R	06-0346	0.00	0.38	3	46	1839
1C150102R	06-0346	0.00	0.36	10	61	1636
1C150103R	06-0346	0.00	0.30	22	53	1810
1C150104R	06-0346	0.00	0.58	13	34	1762
1C150105R	06-0346	1.58	1.22	14	118	1897
1C150106R	06-0346	1.69	0.00	5	34	1278
1C150107R	06-0346	0.00	0.00	19	34	1403
1C150108R	06-0346	0.00	0.66	20	42	1597
1C150109R	06-0346	0.00	0.00	16	38	1220
1C150110R	06-0346	0.00	0.00	22	57	1742
1C150111R	06-0346	0.00	0.00	23	23	172
1C150112R	06-0346	1.64	3.69	9	630	2652
1C150113R	06-0346	0.00	1.68	5	57	2313
1C150114R	06-0346	0.00	0.00	21	27	1558
1C150115R	06-0346	2.01	0.12	16	122	1481
1C150116R	06-0346	0.00	0.00	16	11	1316
1C150117R	06-0346	0.00	0.00	13	38	1674
1C150118R	06-0346	1.69	0.00	10	11	1800
n/a smears not required		RESRAD	averages		287	1714

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T Building rooms 62 and 63

MARSSIM classification Class 1

Historical use Room 63 was associated with the neutron source program and was later used for tritium production. SYS-PRS 233 (Sump 13) was high-risk sump located in room 63 and was taken out of service and later removed from the building. Residual bulk contamination remains in the concrete floor. There were two elevators (EL# 19 and EL# 20) located in Room 63. Both elevators were removed. Room 62 occupies the space that was previously held by EL# 20; a metal grate was placed over the opening and the area was later used as a storage area. The contaminants of concern (COCs) are Am-241, Pu-238, Pu-239 and Cs-137.

Survey description summary

gamma scan: drain chases - 100%

sump - 100%

alpha and beta scan: floor - 100%

sump - 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

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

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

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

28 each judgmental location measurements in the hole that previously held the sump, its steel liner, and in the drain chases that previously held the drains

28 direct alpha and beta measurements were taken on the floor in Room 63 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 7 elevated areas in Room 63.

volumetric samples: A composite sample from 19 sample locations was collected and used to represent the average volumetric concentration for use in the RESRAD-Build dose models. Nine of the locations were selected at random and the other 10 were biased samples from the most highly elevated areas. The samples were collected by drilling 1" diameter holes into the concrete floor to a depth of 2.54 cm (1"). The powder from these drillings were combined to form a single sample.

In the RESRAD-Build renovation scenario the activity found in the 2.54 cm composite sample is assumed to represent the activity concentration (pCi/g) in the concrete to a depth of 15 cm.

For the RESRAD-Build occupation scenario, the activity found in the 2.54 cm composite sample is again assumed to be representative of the contamination levels to a depth of 15 cm. In this scenario, however, all of the activity is modeled as being on the surface.

Composite samples from the surface to 15 cm were collected to determine the extent of contamination.

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

gamma scan: no activity significantly above natural background detected

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 20B in Attachment D

potential radiation dose from building occupancy scenario: 0.87 mrem/yr

potential radiation dose from building renovation scenario: 1.62 mrem/yr

Treatment of elevated*** measurements

No elevated measurements were detected in the hole that previously held sump # 13 (SYS-PRS 233). No further action required.

Elevated measurements were detected in Room 62 on RSDS MT-05-1120. One area was on the floor and five were the metal grate that covered the opening. The metal plate was removed and disposed as radioactive waste. No further action was taken at the elevated measurement on the floor since the area was to be dose modeled. That floor area was included with the floor area in Room 63. There was an elevator shaft in the bottom of the floor in Room 62. The shaft was too small in diameter to survey. A sampling tool was lowered down the shaft to survey sediment at the bottom. Three elevated alpha measurements were detected on a sampling tool used to survey sediment at the bottom of the elevator shaft on RSDS MT-06-0041. The sediment was analyzed and determined to contain Pu-238 and Pu-239. (See page F180). The shaft was pressure washed until all the sediment was removed and the water was run through a water filtration unit. The water filtration unit was surveyed on RSDS MT-06-0230 no elevated measurements were detected. The sediment, the sampling tool, and the water filtration unit were disposed as radioactive waste. No further action is required.

Based on historical knowledge and analytical results, the contamination in Rooms 62 and 63 were identified to be from the neutron source program. The alpha emitting contaminants of concern (COCs) are Am-241, Pu-238, Pu-239. The $DCGL_w$ for these radionuclides is 100 dpm/100 cm² and the $DCGL_{EMC}$ is 300 dpm/100 cm². The beta/gamma emitting contaminant of concern (COC) is Cs-137. The $DCGL_w$ for these radionuclides is 5000 dpm/100 cm² and the $DCGL_{EMC}$ is 15,000 dpm/100 cm². There were no elevated beta readings above the $DCGL_w$. Multiple elevated alpha measurements were detected in the floor of Rooms 63 and Room 62 (hole in the floor that previously held El. 20), which exceed the $DCGL_{EMC}$ for gross alpha. Samples were collected from the floor to a depth of 2.54 cm, and from the floor to a depth of 15 cm, to determine the extent of volumetric contamination. It was determined that volumetric contamination exists within the top 15 cm of the concrete floor. 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.

Naturally occurring radioactive materials (NORM) in building materials (e.g. Th-228, Th-230, 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. Laboratory MDA values were not used when non-COCs were reported at less than or equal to the MDA. Analytical information from the alpha spectroscopy reports for Lab ID#(s) 0600346 on page F171 and 0506256 on page F168 and gamma spectroscopy report for LAB ID# GL08741 on page F169, located in RSDS MT-05-1181 was used

as input for the dose model. Analytical information from the gamma spectroscopy reports for LAB ID# (s) GL11184 on page F196, and GL11185 on page F197 located in RSDS MT-06-0346 were used to determine the depth of contamination.

The RESRAD-Build computer code was used to assess potential radiation dose to future building occupants in Rooms 61, 62 and 63. Room 62 was considered to be part of Room 63 for the dose modeling. 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). Since the potential doses from the building occupancy scenario (0.87 mrem/yr), and the building renovation scenario (1.62 mrem/yr) were all below 15 mrem/yr, excluding naturally occurring radioactive materials (NORM), no further action was required.

*** 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.

Note: See pages D49 and D58 for computed dose values.

Calculations 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 D58A – D58B.

Conclusion Survey units meet the release criteria.

Attachment D
Mound - T Building Survey Unit 1C-16 and SYS-PRS 233
Data Analysis Worksheet

1C16-01 (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	0.55	0.57	9	33	1367
StDev	1.72	0.75	7	30	318
Max	7.49	2.55	27	83	2039

1C16-02 (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	0.17	0.59	32	14	1208
StDev	0.51	1.07	78	7	208
Max	1.74	3.94	333	26	1686

1C16-01 Judgemental (17 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	0.10	0.18	12	103	1502
StDev	0.43	0.43	22	111	326
Max	1.77	1.73	90	399	1953

1C16-02 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	0.52	0.64	75	18	1332
StDev	1.19	0.90	171	6	347
Max	3.57	2.77	556	26	2184

1C16 Drains, Vents, and Utilities (21 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	0.42	0.58	20	46	833
StDev	1.01	0.89	36	14	245
Max	4.08	2.75	141	91	1342

1C16 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	0.36	0.58	20	24	1287
StDev	1.27	0.91	56	24	277
Max	7.49	3.94	333	83	2039

SYS-PRS 233 (28 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	0.15	0.79	9	31	1328
StDev	0.47	1.26	10	15	206
Max	1.79	5.08	33	77	1665

1C16 RESRAD (19 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	1.03	0.34	4	165	1747
StDev	2.49	0.37	5	160	262
Max	7.49	1.16	14	591	2255

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Attachment D Mound T - Bldg
Survey Unit 1C-16 and
SYS-PRS 233
Data Analysis Worksheet

	Location	RSDS	Removable(dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
1C16-01 (20 samples each)	1C160101S	05-1092	0.00	0.00	8	64	2039
	1C160102S	05-1092	0.00	0.00	0	79	1809
	1C160103S	05-1092	1.77	0.54	5	34	1732
	1C160104S	05-1092	0.00	0.32	3	26	1751
	1C160105S	05-1092	0.00	1.73	15	19	1222
	1C160106S	05-1092	0.00	0.00	12	11	1106
	1C160107S	05-1092	0.00	0.31	10	8	1077
	1C160108S	05-1092	0.00	2.55	10	8	1395
	1C160109S	05-1092	0.00	0.00	27	26	1049
	1C160110S	05-1092	0.00	0.47	4	79	1530
	1C160111S	05-1092	0.00	0.27	0	68	1751
	1C160112S	05-1092	7.49	1.16	14	75	1251
	1C160113S	05-1092	0.00	0.29	5	83	1462
	1C160114S	05-1092	0.00	0.00	0	53	1501
	1C160115S	05-1092	0.00	1.42	15	4	1299
	1C160116S	05-1092	0.00	0.20	14	15	1039
	1C160117S	05-1092	0.00	0.00	4	0	962
	1C160118S	05-1092	0.00	0.00	1	4	1039
	1C160119S	05-1092	1.77	1.80	11	4	1299
	1C160120S	05-1092	0.00	0.32	15	11	1020
1C16-02 (20 samples each)	1C160201S	05-1125	1.74	0.00	1	23	1264
	1C160202S	05-1125	1.57	0.26	0	19	939
	1C160203S	05-1125	0.00	0.00	0	8	920
	1C160204S	05-1125	0.00	3.94	1	19	1140
	1C160205S	05-1125	0.00	0.00	14	4	1437
	1C160206S	05-1125	0.00	1.02	89	23	1035
	1C160207S	05-1125	0.00	0.31	333	11	1111
	1C160208S	05-1125	0.00	0.37	10	26	1178
	1C160209S	05-1125	0.00	0.26	13	23	1264
	1C160210S	05-1125	0.00	2.71	10	8	1236
	1C160211S	05-1125	0.00	0.00	0	15	1533
	1C160212S	05-1125	0.00	0.00	2	15	1494
	1C160213S	05-1125	0.00	0.00	10	15	1686
	1C160214S	05-1125	0.00	0.00	3	8	1178
	1C160215S	05-1125	0.00	0.00	131	8	1092
	1C160216S	05-1125	0.00	1.37	0	19	910
	1C160217S	05-1125	0.00	0.00	6	8	1054
	1C160218S	05-1125	0.00	0.00	1	15	1121
	1C160219S	05-1125	0.00	0.00	14	15	1303
	1C160220S	05-1125	0.00	1.53	4	8	1264

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Attachment D Mound T - Bldg
Survey Unit 1C-16 and
SYS-PRS 233
Data Analysis Worksheet

	Location	RSDS	Removable(dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
1C16-01 Judgemental (17 samples each)	1C160101J	05-1106	0.00	0.00	16	64	1886
	1C160102J	05-1106	0.00	0.42	2	11	1405
	1C160103J	05-1106	0.00	0.00	16	41	1635
	1C160104J	05-1106	0.00	0.00	7	26	943
	1C160105J	05-1106	0.00	1.73	4	30	702
	1C160106J	05-1106	0.00	0.00	0	79	1530
	1C160107J	05-1106	0.00	0.00	0	30	1174
	1C160108J	05-1106	0.00	0.00	0	19	1366
	1C160109J	05-1106	0.00	0.00	0	75	1578
	1C160110J	05-1106	0.00	0.00	0	34	1953
	1C160101K	05-1120	0.00	0.00	0	41	1414
	1C160102K	05-1120	0.00	0.00	90	120	1693
	1C160103K	05-1120	1.77	0.00	32	297	1558
	1C160104K	05-1120	0.00	0.00	10	399	1732
	1C160105K	05-1120	0.00	0.54	5	143	1443
	1C160106K	05-1120	0.00	0.00	24	252	1789
	1C160107K	05-1120	0.00	0.31	4	90	1732
1C16-02 Judgemental (10 samples each)	1C160201J	05-1106	0.00	0.00	69	15	1308
	1C160202J	05-1106	1.68	0.47	556	26	1097
	1C160203J	05-1106	0.00	0.00	5	26	1405
	1C160204J	05-1106	0.00	2.77	73	23	1308
	1C160205J	05-1106	0.00	1.42	12	19	914
	1C160206J	05-1106	3.57	0.00	23	19	1039
	1C160207J	05-1106	0.00	0.99	7	11	2184
	1C160208J	05-1106	0.00	0.00	6	8	1231
	1C160209J	05-1106	0.00	0.72	0	19	1337
	1C160210J	05-1106	0.00	0.00	3	15	1501

Attachment D Mound T - Bldg
Survey Unit 1C-16 and
SYS-PRS 233
Data Analysis Worksheet

	Location	RSDS	Removable(dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
1C16 Drains, Vents, and Utilities (21 samples each)	1C160101D	05-0641	0.00	0.00	3	38	961
	1C160101U	05-0641	0.00	0.00	13	91	508
	1C160102D	05-0641	0.00	2.75	0	53	1107
	1C160103D	05-0641	1.77	0.00	0	34	1061
	1C160104D	05-0641	0.00	0.32	0	49	1052
	1C160105D	05-0641	0.00	0.00	0	49	952
	1C160106D	05-0641	0.00	0.00	0	53	499
	1C160201U	05-0641	0.00	0.27	7	42	862
	1C160201V	05-0641	4.08	1.20	56	49	798
	1C160202U	05-0641	0.00	0.00	1	38	862
	1C160202V	05-0641	0.00	0.37	0	57	862
	1C160203U	05-0641	0.00	0.29	40	49	698
	1C160203V	05-0641	0.00	0.26	0	26	744
	1C160204U	05-0641	0.00	0.39	88	42	644
	1C160204V	05-0641	1.41	1.44	7	26	707
	1C160205U	05-0641	0.00	2.66	37	42	626
	1C160206U	05-0641	0.00	0.20	141	34	635
	1C160207U	05-0641	0.00	0.00	0	42	707
	1C160208U	05-0641	1.57	0.00	18	60	1333
	1C160209U	05-0641	0.00	1.98	5	53	1342
1C160210U	05-0641	0.00	0.00	7	34	535	
SYS-PRS 233 (28 samples each)	PRS2330101J	06-0479	0.00	0.00	0	4	1529
	PRS2330102J	06-0479	0.00	0.48	0	27	1278
	PRS2330103J	06-0479	0.00	2.91	11	27	1665
	PRS2330104J	06-0479	0.00	0.66	6	27	1597
	PRS2330105J	06-0479	0.00	2.36	9	27	1452
	PRS2330106J	06-0479	0.00	0.48	6	38	1597
	PRS2330107J	06-0479	0.00	2.97	2	23	1278
	PRS2330108J	06-0479	0.00	0.45	1	34	1229
	PRS2330109J	06-0479	0.00	0.00	8	34	1432
	PRS2330110J	06-0479	0.00	0.00	0	38	1413
	1C160101T	05-1134	0.00	0.00	0	22	1270
	1C160102T	05-1134	0.00	0.00	0	25	1419
	1C160103T	05-1134	0.00	0.00	0	22	1615
	1C160104T	05-1134	1.71	0.00	0	22	1363
	1C160105T	05-1134	0.76	5.08	2	18	1541
	1C160106T	05-1134	0.00	2.13	0	14	1298
	1C160107T	05-1134	0.00	0.00	0	29	1597
	1C160108T	05-1134	0.00	0.00	0	22	1167
	1C150101T	06-570	0.00	1.68	7	23	954
	1C150102T	06-570	1.79	0.00	23	46	1130
	1C150103T	06-570	0.00	0.00	25	77	1081
	1C150104T	06-570	0.00	0.00	33	50	1363
	1C150105T	06-570	0.00	1.44	19	42	1344
	1C150106T	06-570	0.00	0.00	14	46	1324
	1C150107T	06-570	0.00	0.27	24	42	906
	1C150108T	06-570	0.00	0.00	20	12	1110
	1C150109T	06-570	0.00	1.11	20	50	1110
	1C150110T	06-570	0.00	0.00	25	42	1120

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Attachment D Mound T - Bldg
Survey Unit 1C-16 and
SYS-PRS 233
Data Analysis Worksheet

	Location	RSDS	Removable(dpm/100cm ²)			Direct (dpm/100cm ²)	
			a	b	H	a	b
1C16 RESRAD (19 samples each)	1C160101S	05-1092	0.00	0.00	8	64	2039
	1C160102S	05-1092	0.00	0.00	0	79	1809
	1C160103S	05-1092	1.77	0.54	5	34	1732
	1C160104S	05-1092	0.00	0.32	3	26	1751
	1C160110S	05-1092	0.00	0.47	4	79	1530
	1C160111S	05-1092	0.00	0.27	0	68	1751
	1C160112S	05-1092	7.49	1.16	14	75	1251
	1C160113S	05-1092	0.00	0.29	5	83	1462
	1C160114S	05-1092	0.00	0.00	0	53	1501
	1C160101X	05-1155	n/a	n/a	n/a	321	2062
	1C160102X	05-1155	n/a	n/a	n/a	42	1636
	1C160103X	05-1155	n/a	n/a	n/a	84	1742
	1C160104X	05-1155	n/a	n/a	n/a	591	2187
	1C160105X	05-1155	n/a	n/a	n/a	343	1810
	1C160106X	05-1155	n/a	n/a	n/a	431	1568
	1C160107X	05-1155	n/a	n/a	n/a	160	1616
	1C160108X	05-1155	n/a	n/a	n/a	275	2255
	1C160109X	05-1155	n/a	n/a	n/a	275	1965
	1C160110X	05-1155	n/a	n/a	n/a	61	1529
n/a smears not required			RESRAD average			165	1747

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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.

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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.

D19 | 58 RES
64 6-22-06

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.

D50164⁵⁸msd
6-20-06

T Building, Room 61

Contaminants of Concern for Room 61 are Am-241, Pu-238, Pu-239, and Cs-137

Radionuclide	Volumetric contamination from composite sample from surface 2.54 cm (1") depth [pCi/g]	surface contamination based on average results from composite sample from 2.54 cm (1") depth pCi/g normalized to the surface [dpm/100cm ²]	Annual Dose based on Building Occupancy Scenario (mrem) based on 2.54 cm (1") sample result pCi/g normalized to surface measurement)	Average level of residual volumetric contamination from composite sample from 2.54 cm (1") depth (pCi/g)	Annual Dose based on Building Renovation Scenario (mrem)
Pu-242	---	---	---	---	---
Pu-241	---	---	---	---	---
Am-241	0.05	400	0.31	0.05	0.65
Pu-240	---	---	---	---	---
Pu-239	0.04	320	0.24	0.04	0.51
Pu-238	0.04	320	0.22	0.04	0.46
U-238	---	---	---	---	---
U-235	---	---	---	---	---
U-234	---	---	---	---	---
Th-230	---	---	---	<MDA	---
Th-228	---	---	---	---	---
Ac-227	<MDA	---	---	<MDA	---
Ra-226	<MDA	---	---	<MDA	---
Bi-210m	---	---	---	<MDA	---
Bi-207	---	---	---	<MDA	---
Pb-210	<MDA	---	---	<MDA	---
Cs-137	0.06	480	0.11	0.06	0.03
Ag-108m	---	---	---	---	---
Sr-90	<MDA	---	---	<MDA	---
Co-60	<MDA	---	---	<MDA	---
H-3	---	---	---	---	---

total alpha 1039
total beta/gamma 480

alpha spec (See page F51) Lab ID # 06000345
gamma spec (See page F49) Lab ID# GL08742
based on MDA values

Total dose from building occupancy scenario 0.88 mrem/year
Total dose from building renovation scenario 1.65 mrem/year

formula used to convert [pCi/g] to [dpm/m²]
 $1 \text{ pCi/g} \times 10,000 \text{ cm}^2/\text{m}^2 \times 15 \text{ cm} \times 2.4 \text{ g/cm}^3 \times 2.22 \text{ dpm/pCi}$
 $= 765,900 \text{ dpm/m}^2$

- a Naturally occurring radioactive materials (NORM) in building materials are not used in the dose model
- b MDA values are used when COCs are reported at less than or equal to MDA.
- c MDA values are not used when non-COCs are reported less than the MDA
- d Sr-90 is assumed to be present at the same activity as Cs-137 in areas that were used for polonium processing. This is a conservative assumption, since both are long lived fission products which are produced and decay at similar rates.
- e gamma spectroscopy report
- f alpha spectroscopy report
- non-COC

NOTE: Sr-90 was not included as this was not a polonium processing area.

Data/58

T Building, Room 63

Contaminants of Concern for Room 63 are Am-241, Pu-238, Pu-239, and Cs-137

Radionuclide	Volumetric contamination from composite sample from surface 2.54 cm (1") depth [pCi/g]	surface contamination based on average results from composite sample from 2.54 cm (1") depth pCi/g normalized to the surface [dpm/100cm ²]	Annual Dose based on Building Occupancy Scenario (mrem) based on 2.54 cm (1") sample result pCi/g normalized to surface measurement	Average level of residual volumetric contamination from composite sample from 2.54 cm (1") depth [pCi/g]	Annual Dose based on Building Renovation Scenario (mrem)
Pu-242	—	—	—	—	—
Pu-241	—	—	—	—	—
Am-241	0.10	799	0.31	0.10	0.65
Pu-240	—	—	—	—	—
Pu-239	0.03	240	0.24	0.03	0.51
Pu-238	0.09	719	0.22	0.09	0.46
U-238	—	—	—	—	—
U-235	—	—	—	—	—
U-234	—	—	—	—	—
Th-230	—	—	—	<MDA	**
Th-228	—	—	—	—	—
Ac-227	<MDA	—	—	<MDA	c,e
Ra-226	<MDA	—	—	<MDA	c,e
Bi-210m	—	—	—	<MDA	c,e
Bi-207	—	—	—	<MDA	c,e
Pb-210	<MDA	—	—	<MDA	c,e
Cs-137	0.06	480	0.11	0.06	b, d, e
Ag-108m	—	—	—	—	—
Sr-90	<MDA	—	—	<MDA	c, d, e
Co-60	<MDA	—	—	<MDA	c, e
H-3	—	—	—	—	—

total alpha 1758
total beta/gamma 480

alpha spec (See page F171) Lab ID # 0600346

gamma spec (See page F169) Lab ID# GL08741

based on MDA values

Total dose from building occupancy scenario 0.88 mrem/year
Total dose from building renovation scenario 1.65 mrem/year

formula used to convert [pCi/g] to [dpm/m²]
 $1 \text{ pCi/g} \times 10,000 \text{ cm}^2/\text{m}^2 \times 15 \text{ cm} \times 2.4 \text{ g/cm}^3 \times 2.22 \text{ dpm/pCi}$
 $= 765,900 \text{ dpm/m}^2$

- a Naturally occurring radioactive materials (NORM) in building materials are not used in the dose model
- b MDA values are used when COCs are reported at less than or equal to MDA.
- c MDA values are not used when non-COCs are reported less than the MDA
- d Sr-90 is assumed to be present at the same activity as Cs-137 in areas that were used for polonium processing. This is a conservative assumption, since both are long lived fission products which are produced and decay at similar rates.
- e gamma spectroscopy report
- f alpha spectroscopy report
- non-COC

NOTE: Sr-90 was not included as this was not a polonium processing area.

D206/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

RESRAD-BUILD Table of Contents

RESRAD-BUILD Input Parameters.....	2
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Source Information.....	4
For time = 0.00E+00 yr	
Time Specific Parameters.....	5
Receptor-Source Dose Summary.....	6
Dose by Pathway Detail.....	7
Dose by Nuclide Detail.....	8
Full Summary.....	9

Dai/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.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	4.650	4.650	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

D20/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

RESRAD-BUILD Table of Contents

RESRAD-BUILD Input Parameters.....	2
Building Information.....	3
Source Information.....	4
For time = 0.00E+00 yr	
Time Specific Parameters.....	5
Receptor-Source Dose Summary.....	6
Dose by Pathway Detail.....	7
Dose by Nuclide Detail.....	8
Full Summary.....	9

D23/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

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RESRAD-BUILD Input Parameters

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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	4.650	4.650	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

Djg/58

==== Building Information ====

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

Height[m]	Area [m2]	Air Exchanges [m3/hr]
H1: 3.000	Area 87.100	LAMBDA: 8.00E-01
		Room 1
		<=Q01: 2.09E+02
		Q10 : 2.09E+02

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

D25/58

Title : Mound T Building - Room 61 Building Occ
 Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 4.65 y: 4.65 z: 0.00[m]
 Geometry:: Type: Area Area:8.71E+01 [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]	Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AM-241	3.830E+04	1.640E-03	2.000E-01	4.311E-05
PU-239	3.060E+04	1.595E-03	1.932E-01	2.234E-07
PU-238	3.060E+04	1.441E-03	1.766E-01	2.572E-07
NP-237	0.000E+00	2.000E-03	2.432E-01	5.450E-04
U-235	0.000E+00	1.203E-04	5.541E-02	4.068E-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
PA-231	0.000E+00	4.775E-03	5.766E-01	9.054E-05
TH-230	0.000E+00	2.468E-04	1.468E-01	9.189E-07
TH-229	0.000E+00	1.815E-03	9.730E-01	7.748E-04
AC-227	0.000E+00	6.667E-03	3.027E+00	9.730E-04
RA-226	0.000E+00	5.991E-04	3.874E-03	4.685E-03
PB-210	0.000E+00	3.275E-03	1.045E-02	4.730E-06
CS-137	4.600E+04	2.252E-05	1.437E-05	1.437E-03

D26/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

Evaluation Time: 0.00000000E+00 years

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

==== Source Information =====

Source: 1

Location:: Room : 1 x: 4.65 y: 4.65 z: 0.00 [m]
Geometry:: Type: Area Area:8.71E+01 [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	3.830E+04
	PU-239	3.060E+04
	PU-238	3.060E+04
	NP-237	0.000E+00
	U-235	0.000E+00
	U-234	0.000E+00
	U-233	0.000E+00
	PA-231	0.000E+00
	TH-230	0.000E+00
	TH-229	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00
	CS-137	4.600E+04

D27/58

Title : Mound T Building - Room 61 Building Occ
Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld
Evaluation Time: 0.00000000E+00 years

RESRAD-BUILDDose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Total
	1	
Receptor 1	8.83E-01	8.83E-01
Total	8.83E-01	8.83E-01

D28/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

Evaluation Time: 0.0000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.20E-01	2.86E-05	2.13E-07	7.53E-01	9.98E-18	9.94E-03
Total	1.20E-01	2.86E-05	2.13E-07	7.53E-01	9.98E-18	9.94E-03

029/58

Title : Mound T Building - Room 61 Building Occ
 Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld
 Evaluation Time: 0.0000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241		
AM-241	3.15E-01	3.15E-01
NP-237	6.74E-08	6.74E-08
U-233	2.20E-14	2.20E-14
TH-229	8.62E-18	8.62E-18
PU-239		
PU-239	2.39E-01	2.39E-01
U-235	4.51E-11	4.51E-11
PA-231	2.50E-15	2.50E-15
AC-227	1.00E-16	1.00E-16
PU-238		
PU-238	2.16E-01	2.16E-01
U-234	1.03E-07	1.03E-07
TH-230	7.63E-13	7.63E-13
RA-226	1.17E-16	1.17E-16
PB-210	5.52E-20	5.52E-20
CS-137		
CS-137	1.13E-01	1.13E-01

D30/58

Title : Mound T Building - Room 61 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom61.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00

1 8.83E-01

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00

1 8.83E-01

D31/58

Title : Mound T Building - Room 61 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld

RESRAD-BUILD Table of Contents

RESRAD-BUILD Input Parameters.....	2
Building Information.....	3
Source Information.....	4
For time = 0.00E+00 yr	
Time Specific Parameters.....	5
Receptor-Source Dose Summary.....	6
Dose by Pathway Detail.....	7
Dose by Nuclide Detail.....	8
Full Summary.....	9

D32/58

Title : Mound T Building - Room 61 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.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	4.650	4.650	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

D33/58

==== Building Information ====

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

Height[m]	Area [m2]	Air Exchanges [m3/hr]
H1: 3.000	Area 87.100	***** * * * * <=Q01: 2.09E+02 * Room 1 Q10 : 2.09E+02 * LAMBDA: 8.00E-01 * * * *****

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

D34/58

Title : Mound T Building - Room 61 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld

==== Source Information ====

Source: 1

Location:: Room : 1 x: 4.65 y: 4.65 z: 0.00[m]
 Geometry:: Type: Volume Area:8.71E+01 [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 Dose Conversion Factor (Library: BUILD)

	[pCi/g]	Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
AM-241	5.000E-02	3.640E-03	4.440E-01	9.570E-05
PU-239	4.000E-02	3.540E-03	4.290E-01	4.960E-07
PU-238	4.000E-02	3.200E-03	3.920E-01	5.710E-07
NP-237	0.000E+00	4.440E-03	5.400E-01	1.210E-03
U-235	0.000E+00	2.670E-04	1.230E-01	9.030E-04
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
PA-231	0.000E+00	1.060E-02	1.280E+00	2.010E-04
TH-230	0.000E+00	5.480E-04	3.260E-01	2.040E-06
TH-229	0.000E+00	4.030E-03	2.160E+00	1.720E-03
AC-227	0.000E+00	1.480E-02	6.720E+00	2.160E-03
RA-226	0.000E+00	1.330E-03	8.600E-03	1.040E-02
PB-210	0.000E+00	7.270E-03	2.320E-02	1.050E-05
CS-137	6.000E-02	5.000E-05	3.190E-05	3.190E-03

D35/58

Title : Mound T Building - Room 61 Building Ren
Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld
Evaluation Time: 0.00000000E+00 years

```

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

```

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

Source: 1

Location:: Room : 1 x: 4.65 y: 4.65 z: 0.00 [m]
 Geometry:: Type: Volume Area:8.71E+01 [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	5.000E-02
	PU-239	4.000E-02
	PU-238	4.000E-02
	NP-237	0.000E+00
	U-235	0.000E+00
	U-234	0.000E+00
	U-233	0.000E+00
	PA-231	0.000E+00
	TH-230	0.000E+00
	TH-229	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00
	CS-137	6.000E-02

D36/58

Title : Mound T Building - Room 61 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld

Evaluation Time: 0.00000000E+00 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Total
	1	
Receptor 1	1.65E+00	1.65E+00
Total	1.65E+00	1.65E+00

D37/58

Title : Mound T Building - Room 61 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld

Evaluation Time: 0.00000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.71E-02	5.28E-05	3.94E-07	1.58E+00	1.58E-18	3.56E-02
Total	2.71E-02	5.28E-05	3.94E-07	1.58E+00	1.58E-18	3.56E-02

D38/58

Title : Mound T Building - Room 61 Building Ren
Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld
Evaluation Time: 0.00000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241		
AM-241	6.54E-01	6.54E-01
NP-237	6.38E-08	6.38E-08
U-233	1.11E-14	1.11E-14
TH-229	2.06E-18	2.06E-18
J-239		
PU-239	5.06E-01	5.06E-01
U-235	3.54E-11	3.54E-11
PA-231	1.26E-15	1.26E-15
AC-227	2.46E-17	2.46E-17
PU-238		
PU-238	4.58E-01	4.58E-01
U-234	1.06E-07	1.06E-07
TH-230	3.86E-13	3.86E-13
RA-226	5.50E-18	5.50E-18
PB-210	8.05E-21	8.05E-21
S-137		
CS-137	2.72E-02	2.72E-02

D39/58

Title : Mound T Building - Room 61 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom61.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00

1 1.65E+00

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00

1 3.36E+00

040/58

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

RESRAD-BUILD Table of Contents

RESRAD-BUILD Input Parameters.....	2
Building Information.....	3
Source Information.....	4
For time = 0.00E+00 yr	
Time Specific Parameters.....	5
Receptor-Source Dose Summary.....	6
Dose by Pathway Detail.....	7
Dose by Nuclide Detail.....	8
Full Summary.....	9

D41/SD

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

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=====

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	4.800	4.800	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

D42/58

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 4.80 y: 4.80 z: 0.00[m]
 Geometry:: Type: Area Area:9.18E+01 [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 [dpm/m2]	Dose Conversion Factor (Library: BUILD)		
		Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AM-241	7.660E+04	1.640E-03	2.000E-01	4.311E-05
PU-239	2.300E+04	1.595E-03	1.932E-01	2.234E-07
PU-238	6.890E+04	1.441E-03	1.766E-01	2.572E-07
NP-237	0.000E+00	2.000E-03	2.432E-01	5.450E-04
U-235	0.000E+00	1.203E-04	5.541E-02	4.068E-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
PA-231	0.000E+00	4.775E-03	5.766E-01	9.054E-05
TH-230	0.000E+00	2.468E-04	1.468E-01	9.189E-07
TH-229	0.000E+00	1.815E-03	9.730E-01	7.748E-04
AC-227	0.000E+00	6.667E-03	3.027E+00	9.730E-04
RA-226	0.000E+00	5.991E-04	3.874E-03	4.685E-03
PB-210	0.000E+00	3.275E-03	1.045E-02	4.730E-06
CS-137	4.600E+04	2.252E-05	1.437E-05	1.437E-03

D44/52

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

Evaluation Time: 0.00000000E+00 years

```

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

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

Source: 1

Location:: Room : 1 x: 4.80 y: 4.80 z: 0.00 [m]
 Geometry:: Type: Area Area:9.18E+01 [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	7.660E+04
	PU-239	2.300E+04
	PU-238	6.890E+04
	NP-237	0.000E+00
	U-235	0.000E+00
	U-234	0.000E+00
	U-233	0.000E+00
	PA-231	0.000E+00
	TH-230	0.000E+00
	TH-229	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00
	CS-137	4.600E+04

D45/58

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

Evaluation Time: 0.00000000E+00 years

RESRAD-BUILDDose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Total
	1	
Receptor 1	8.70E-01	8.70E-01
Total	8.70E-01	8.70E-01

D46/58

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

Evaluation Time: 0.00000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1	External	Deposition	Immersion	Inhalation	Radon	Ingestion
Receptor 1	1.29E-01	1.79E-05	1.27E-07	7.31E-01	1.84E-17	9.61E-03
Total	1.29E-01	1.79E-05	1.27E-07	7.31E-01	1.84E-17	9.61E-03

D47/58

Title : Mound T Building - Room 63 Building Occ
 Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld
 Evaluation Time: 0.00000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241		
AM-241	3.70E-01	3.70E-01
NP-237	8.36E-08	8.36E-08
U-233	2.55E-14	2.55E-14
TH-229	1.02E-17	1.02E-17
PU-239		
PU-239	1.04E-01	1.04E-01
U-235	2.34E-11	2.34E-11
PA-231	1.09E-15	1.09E-15
AC-227	4.45E-17	4.45E-17
PU-238		
PU-238	2.81E-01	2.81E-01
U-234	1.34E-07	1.34E-07
TH-230	9.92E-13	9.92E-13
RA-226	2.60E-16	2.60E-16
PB-210	7.49E-20	7.49E-20
CS-137		
CS-137	1.14E-01	1.14E-01

D48/58

Title : Mound T Building - Room 63 Building Occ

Input File : T:\T-Marssim\RESRAD\Tbldgoccupancyroom63.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00

1 8.70E-01

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00

1 8.70E-01

D49/58

Title : Mound T Building - Room 63 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom63.bld

RESRAD-BUILD Table of Contents

RESRAD-BUILD Input Parameters.....	2
Building Information.....	3
Source Information.....	4
For time = 0.00E+00 yr	
Time Specific Parameters.....	5
Receptor-Source Dose Summary.....	6
Dose by Pathway Detail.....	7
Dose by Nuclide Detail.....	8
Full Summary.....	9

D50/58

Title : Mound T Building - Room 63 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom63.bld

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=====

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	4.800	4.800	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

Q51/58

==== Building Information =====

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

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

		* * *
		* * *
		* * *
H1: 5.200		* Room 1 <=Q01: 3.82E+02
		* Q10 : 3.82E+02
Area 91.800		* LAMBDA: 8.00E-01
		* * *

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

Dsa/sr

Title : Mound T Building - Room 63 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom63.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 4.80 y: 4.80 z: 0.00[m]
 Geometry:: Type: Volume Area:9.18E+01 [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 Dose Conversion Factor (Library: BUILD)

	[pCi/g]	Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
AM-241	1.000E-01	3.640E-03	4.440E-01	9.570E-05
PU-239	3.000E-02	3.540E-03	4.290E-01	4.960E-07
PU-238	9.000E-02	3.200E-03	3.920E-01	5.710E-07
NP-237	0.000E+00	4.440E-03	5.400E-01	1.210E-03
U-235	0.000E+00	2.670E-04	1.230E-01	9.030E-04
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
PA-231	0.000E+00	1.060E-02	1.280E+00	2.010E-04
TH-230	0.000E+00	5.480E-04	3.260E-01	2.040E-06
TH-229	0.000E+00	4.030E-03	2.160E+00	1.720E-03
AC-227	0.000E+00	1.480E-02	6.720E+00	2.160E-03
RA-226	0.000E+00	1.330E-03	8.600E-03	1.040E-02
PB-210	0.000E+00	7.270E-03	2.320E-02	1.050E-05
CS-137	6.000E-02	5.000E-05	3.190E-05	3.190E-03

D53/58

Title : Mound T Building - Room 63 Building Ren
Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom63.bld
Evaluation Time: 0.00000000E+00 years

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

==== Source Information =====

Source: 1

Location:: Room : 1 x: 4.80 y: 4.80 z: 0.00 [m]
Geometry:: Type: Volume Area:9.18E+01 [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-01
	PU-239	3.000E-02
	PU-238	9.000E-02
	NP-237	0.000E+00
	U-235	0.000E+00
	U-234	0.000E+00
	U-233	0.000E+00
	PA-231	0.000E+00
	TH-230	0.000E+00
	TH-229	0.000E+00
	AC-227	0.000E+00
	RA-226	0.000E+00
	PB-210	0.000E+00
	CS-137	6.000E-02

D54/58

RESRAD-BUILDDose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Total
	1	
Receptor 1	1.62E+00	1.62E+00
Total	1.62E+00	1.62E+00

DSS/SP

Title : Mound T Building - Room 63 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom63.bld

Evaluation Time: 0.00000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.75E-02	3.31E-05	2.35E-07	1.54E+00	2.92E-18	5.96E-02
Total	2.75E-02	3.31E-05	2.35E-07	1.54E+00	2.92E-18	5.96E-02

D56/58

Title : Mound T Building - Room 63 Building Ren

Input File : T:\T-Marssim\RESRAD\Tbldgrenovationroom63.bld

Evaluation Time: 0.00000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241		
AM-241	7.67E-01	7.67E-01
NP-237	7.53E-08	7.53E-08
U-233	1.29E-14	1.29E-14
TH-229	2.40E-18	2.40E-18
J-239		
PU-239	2.23E-01	2.23E-01
U-235	1.57E-11	1.57E-11
PA-231	5.55E-16	5.55E-16
AC-227	1.08E-17	1.08E-17
PU-238		
PU-238	6.06E-01	6.06E-01
U-234	1.39E-07	1.39E-07
TH-230	5.03E-13	5.03E-13
RA-226	1.13E-17	1.13E-17
PB-210	1.41E-20	1.41E-20
CS-137		
CS-137	2.73E-02	2.73E-02

D57/58

Title : Mound T Building - Room 63 Building Ren

Input File : T:\T-Marssim\RESRAD\tbldgrenovationroom63.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00

1 1.62E+00

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00

1 3.31E+00

D58/58

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)
and

T-05 (Revised 6-01-05)
and

#T-11 (Revised 3-09-06)

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			
SAMPLE TYPE					
<input type="checkbox"/> SCRAPING/SEDIMENT SAMPLE:					
<input type="checkbox"/> FLUID/LIQUID SAMPLE:					
<input type="checkbox"/> OTHER:					
SURVEY TYPE					
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.				

E1/14

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 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.

Continued next page

E2/14

Specific Sampling and Survey Instructions Continued**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

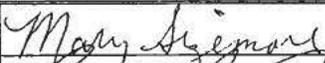
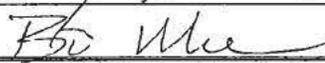
E3/14

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		DATE	7-30-05
Radiological Engineer		DATE	7/30/05
Manager		DATE	8/1/05

SP CLOSE-OUT SIGNATURES

Project Engineer		DATE	
Radiological Engineer		DATE	
Manager		DATE	

COMMENTS

E4/14

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

Es/14

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

E6/14

SURVEY PLAN FORM					
SP NUMBER	T-05	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 sumps and associated piping in T Building to support decisions on final disposition and free release of T Building				
SURVEY UNIT # 1	See Attachment 1	SURVEY UNIT # 4		SURVEY UNIT # 7	
SURVEY UNIT # 2		SURVEY UNIT # 5		SURVEY UNIT # 8	
SURVEY UNIT # 3		SURVEY UNIT # 6		SURVEY UNIT # 6	
SAMPLE TYPE					
<input type="checkbox"/> SCRAPING/SEDIMENT SAMPLE:					
<input type="checkbox"/> FLUID/LIQUID SAMPLE:					
<input type="checkbox"/> OTHER:					
SURVEY TYPE					
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	43-68 Hand Probe		
SURFACE SCAN	<input type="checkbox"/> BETA <input checked="" type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE	L-2360	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Refer to MD-80036, Op number 30040, Operation of Ludlum 2360 with Fidler probe.
		PROBE TYPE	Fidler 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.
		PROBE TYPE	43-68 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

E7/14

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

1. Obtain assistance from the responsible building custodian for access to sumps.
2. Exercise extreme caution when performing surveys inside sump area.
3. Follow appropriate site safety procedures when accessing areas requiring fall protection measures.
4. Previously isolated, abandoned, or enclosed sumps covered or filled with concrete should either have the concrete pad removed to ensure that embedded surface can be analyzed.
5. Use L2360 with Fidler probe if surfaces are too uneven to use L2350.

Scanning using Ludlum 2350-1 with 43-68 hand probe

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 in Class 1 areas

Scan 100% of the sump with the L-2350-1 with 43-68 hand probe.

Surface Scan Using a Ludlum 2360 with a Fidler probe

1. Scan the sump location and drain chase surfaces where the drain pipes were located at a rate of 2.5" per second.
2. Record the locations of the area scanned on the RSDS and document the results in accordance with Mound ad Con procedures (no "<" or ">" values).

General Area Exposure Rate Measurements

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

Data Point Location

Locate the data points in each survey unit 2.

Mark each data point with tape or other non-permanent marking.

Document locations on the appropriate RSDS.

Continued next page

E9/14

Static measurements

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.

Perform integrated counts at all pre-designated sample locations.

Record location, material type, and results on RSDS in accordance with Mound Rad Con procedures.

Document gross activity for each location (no "<" or ">" values).

Loose Surface Contamination

Obtain a smear of 100cm² at each survey point identified above.

Count each smear for alpha, beta, and ³H.

Record location and results on RSDS map in accordance with Mound Rad Con procedures.

Continued next page

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 Class 1 sumps. 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 Class 1 sumps.
5. 5% of the scan measurements taken in Class 1 sumps will randomly be selected for replicate scan surveys in accordance with MD-80046, Op 402.
6. Follow Rad Con procedures for Chain of Custody requirements.
7. Ensure alpha and beta smear results are obtained before performing H³ analysis.
8. Record location, material, and results on RSDS in accordance with Mound Rad Con procedures.

Eg/14

ATTACHMENT 1: SPF T-05
Class 1 sumps

Sump #	Survey Unit ID#	Identification
Sump 5	SYS-PRS 340	Waste Water Sump (Tank 251)
Sump 6	SYS-PRS 225	Beta Waste Water Sump (Tank 227)
Sump 7	SYS-PRS 227	Alpha Waste Water Sump (Tank 229)
Sump 8	SYS-PRS 228	Alpha Waste Water Sump (Tank 230)
Sump 9	SYS-PRS 339	Waste Water Sump (Tank 250)
Sump 10	SYS-PRS 229	Alpha Waste Water Sump (Tank 231)
Sump 11	SYS-PRS 230	Alpha Waste Water Sump (Tank 232)
Sump 13	SYS-PRS 233	Alpha Waste Water Sump (Tank 235)

EW/14

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		
		PROBE TYPE			
STATIC MEASUREMENT	<input type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE	COUNT TIME & DETECTOR DISTANCE FROM SURFACE		
		PROBE TYPE			
STATIC MEASUREMENT	<input type="checkbox"/> BETA <input type="checkbox"/> GAMMA <input type="checkbox"/> ALPHA	INST. TYPE	COUNT TIME & DETECTOR DISTANCE FROM SURFACE		
		PROBE TYPE			
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>				

E/2/14

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.

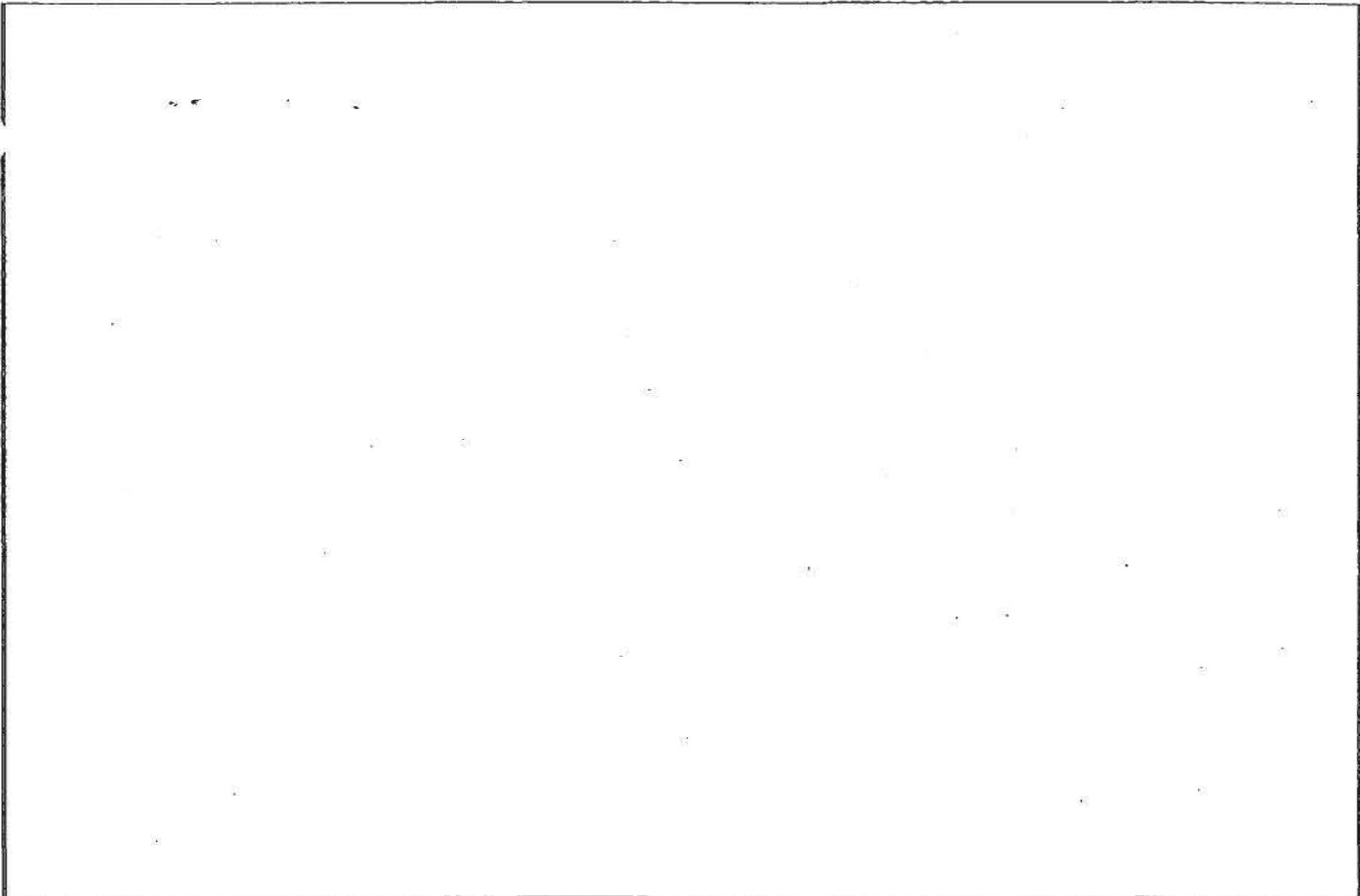
General Area Exposure Rate Measurements

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 [unclear]</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.

E14/14

Attachment F

Summary of Attached Radiological Survey Data Sheets

RSDS	date	su	Content
MT-05-0588	03-Aug-05	1C15	DVU (61)
MT-05-1013	17-Oct-05	1C15	static (01 & 02)
MT-05-1073	24-Oct-05	1C15	Investigative
MT-05-1104	28-Oct-05	1C15	Investigative
MT-05-1153	07-Nov-05	1C15	Investigative
MT-05-1180	11-Nov-05	1C15	Investigative
MT-06-0109	30-Jan-06	1C15	Judgmental (01, 02)
MT-06-0346	22-Mar-06	1C15	Elevated Measurement
MT-06-0488	04-May-06	1C15	static (02)
MT-06-0570	05-Jun-06	1C15/SYS-PRS 233	trench survey for SYS-PRS 233

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all 31

Attachment F Summary of Attached Radiological Survey Data Sheets - continued

RSDS	date	su	Content
MT-05-0641	10-Aug-05	1C16	DVU (63)
MT-05-1074	24-Oct-05	1C16	scan (63) Investigative
MT-05-1092	26-Oct-05	1C16	static (01)
MT-05-1105	28-Oct-05	1C16	Post remediation
MT-05-1106	28-Oct-05	1C16	judgmental (01 & 02)
MT-05-1119	01-Nov-05	1C16	scan (62)
MT-05-1120	01-Nov-05	1C16	scan (62) Investigative
MT-05-1125	02-Nov-05	1C16	static (02) dose (63)
MT-05-1134	03-Nov-05	1C16	scan (63) dose (63)
MT-05-1155	08-Nov-05	1C16	Investigative
MT-05-1181	11-Nov-05	1C16	Post Job
MT-06-0041	12-Jan-06	1C16	judgmental (01)
MT-06-0230	22-Feb-06	1C16	judgmental
MT-06-0345	22-Mar-06	1C16	static (01)
MT-06-0347	23-Mar-06	1C16	scan (63)
MT-06-0449	24-Apr-06	1C16	scan (t-63) static (02)
MT-06-0498	08-May-06	1C16	static (02)
MT-06-0479	03-May-06	SYS-PRS 233	Judgmental, dose
MT-06-0592	19-Jun-06	1C15/1C16	dose

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of ¹⁰ 9⁸ 4/14/05

LOCATION: (BLDG./AREA/ROOM)	T Bldg 1C-15 Rm 61	SURVEY NO.	MT-05-588
PURPOSE:	Drains vents and utilities 1C15	RWP NO.	N/A
		DATE:	8/4/05
		TIME:	2358

MAP/DRAWING

Static survey of Drains vents and utilities resulted in no elevated readings

These Drains were done after the Flood of the first floor

COPY

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

= mrem/hr neutron
 = air sample number

= swipe number
 or β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5854/5861	7/29/06
2350-1	5889/5890	1/17/06
N/A		

Completed by: (Signature)		Date:	8/4/05
Completed by: (Print Name)	M N KOWE		
Counted by: (Signature)	see Attached	HP#	Date:
Counted by: (Print Name)	see Attached		
Reviewed/Approved by: (Signature)		Date:	8/8/05
Reviewed/Approved by: (Print Name)	Jess Griffin		

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4/16/05

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_019
Batch Ended: 8/4/05 9:58
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-0588 REYNOLDS [22] GWD

COPY

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	1.74	2.23		2.12	2.62	
A2	2	0.00	2.02		0.42	1.65	
A3	3	4.02	3.21		0.36	1.78	
A4	4	0.00	2.15		2.73	2.42	
B1	5	0.77	1.90		0.33	1.69	
B2	6	0.00	1.87		0.00	1.59	
B3	7	0.00	2.20		0.31	1.88	
B4	8	0.00	1.99		0.37	1.70	
C1	9	0.00	2.05		0.00	1.23	
C2	10	0.00	1.91		0.00	1.12	
C3	11	1.73	2.06		0.00	1.22	
C4	12	0.00	1.95		0.00	1.13	
D1	13	0.00	2.11		5.28	3.07	
D2	14	1.74	2.17		0.24	1.68	
D3	15	0.00	2.11		1.42	2.15	
D4	16	0.00	2.04		0.00	1.17	
A1	17	0.00	2.20		0.00	1.86	
A2	18	3.55	2.84		1.26	2.02	
A3	19	1.77	2.27		0.00	1.27	
A4	20	0.00	2.17		5.14	2.96	
B1	21	0.00	1.94		2.91	2.39	
B2	22	0.00	1.92		2.13	2.24	

mk

mk

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Page 4 of 10
4/14/05

8/4/05 11:59:59 AM

QuantaSmart (TM) - 1.31 - Serial# 423022

Page # 1
User: 5801

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\20050804_1046.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-0588.001
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

F-4/227

COPY

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Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

MT05-588

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#
8/4/05	10:46:55 AM	-1		10.00	8	7	12	1	624.72	0	22.8	B	1
8/4/05	10:57:41 AM	0		2.00	593	555	1	0	558.36	1136	5.9		1
8/4/05	11:00:24 AM	1		2.00	4	4	2	4	479.57	7	140.1		1
8/4/05	11:03:06 AM	2		2.00	5	4	0	0	542.99	10	101.9		1
8/4/05	11:05:47 AM	3		2.00	5	4	3	8	582.60	9	110.6		1
8/4/05	11:08:29 AM	4		2.00	48	44	0	1	554.05	93	22.2		1
8/4/05	11:11:12 AM	5		2.00	7	6	0	6	346.15	19	78.3		1
8/4/05	11:13:54 AM	6		2.00	4	4	0	4	536.71	8	121.2		1
8/4/05	11:16:37 AM	7		2.00	4	3	0	4	392.74	9	134.6		1
8/4/05	11:19:20 AM	8		2.00	0	0	0	0	412.99	0	0.0		1
8/4/05	11:22:04 AM	9		2.00	1	1	0	6	504.24	2	436.8		1
8/4/05	11:24:46 AM	10		2.00	0	0	0	25	406.92	0	0.0		1
8/4/05	11:27:27 AM	11		2.00	0	0	0	13	462.06	0	0.0		1
8/4/05	11:30:09 AM	12		2.00	1	1	0	6	597.05	1	564.8		1
8/4/05	11:32:51 AM	13		2.00	0	0	0	13	459.48	0	0.0		1
8/4/05	11:35:33 AM	14		2.00	0	0	0	0	359.13	0	0.0		1
8/4/05	11:38:15 AM	15		2.00	0	1	0	6	437.21	0	*****		1
8/4/05	11:40:57 AM	16		2.00	1	1	0	6	577.17	2	355.0		1
8/4/05	11:44:00 AM	17		2.00	2	2	0	5	560.84	3	262.0		1
8/4/05	11:46:41 AM	18		2.00	17	15	1	4	537.57	32	43.3		1
8/4/05	11:49:24 AM	19		2.00	16	15	0	2	561.87	31	43.9		1
8/4/05	11:52:06 AM	20		2.00	6	5	0	4	542.06	12	88.6		1
8/4/05	11:54:49 AM	21		2.00	5	4	0	8	480.22	10	110.6		1
8/4/05	11:57:31 AM	22		2.00	0	0	0	8	441.87	0	0.0		1

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F9/2224

T-Building Vents, Drains, and Utilities Static Survey

RSDS# mt-05-588

RCT:

RCT: N/A

Alpha	43-68 BKG:	0	EFF:	0.2177	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1732	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.216	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.134	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	1C150204U	5889		5890	1	31	8/3/05	21:45	2	120	7
ALPHA	1C150205U	5889		5890	1	32	8/3/05	21:51	2	120	7
ALPHA	1C150206U	5889		5890	1	33	8/3/05	22:20	2	120	7
ALPHA	1C150207U	5889		5890	1	34	8/3/05	22:23	5	120	18
ALPHA	1C150208U	5889		5890	1	35	8/3/05	22:27	2	120	7
ALPHA	1C150209U	5889		5890	1	36	8/3/05	22:34	2	120	7
ALPHA	1C150210U	5889		5890	1	37	8/3/05	22:43	5	120	18
BETA	1C150204U	5889		5890	2	38	8/3/05	21:46	181	60	1659
BETA	1C150205U	5889		5890	2	39	8/3/05	21:52	185	60	1695
BETA	1C150206U	5889		5890	2	40	8/3/05	22:21	157	60	1439
BETA	1C150207U	5889		5890	2	41	8/3/05	22:24	167	60	1530
BETA	1C150208U	5889		5890	2	42	8/3/05	22:28	131	60	1201
BETA	1C150209U	5889		5890	2	43	8/3/05	22:35	115	60	1054
BETA	1C150210U	5889		5890	2	44	8/3/05	22:44	122	60	1118

N/A

COPY

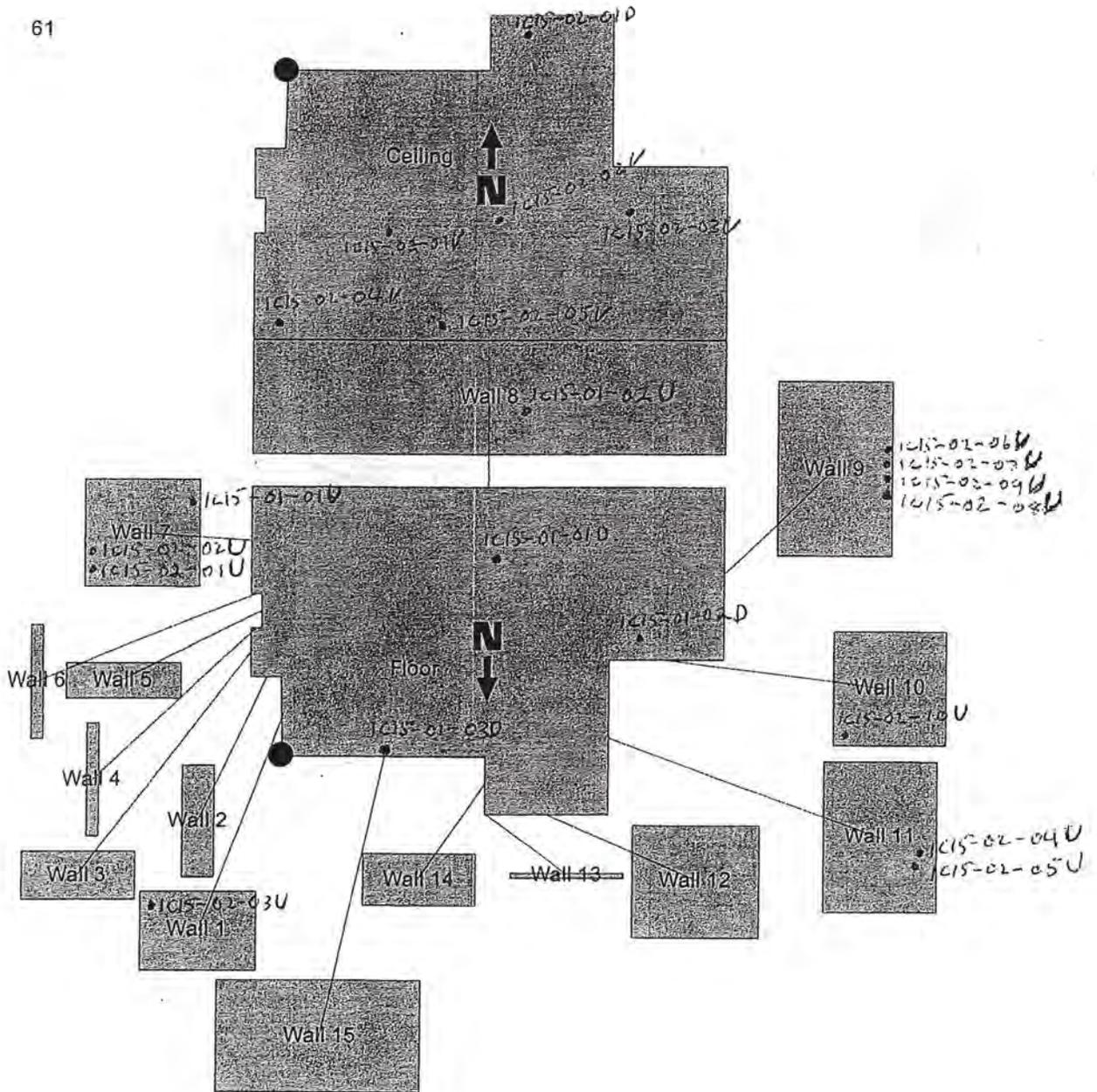
INT-05-588

Page 8 OAG
10 4/11/06

1C-15 Room 61
Class 1 Drains, vents, and utilities

2350-1 5854/5861 cal due 7/24/
2350-1 5859/5890 cal due 11/7/06

61



COPY

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4/14/06
ID

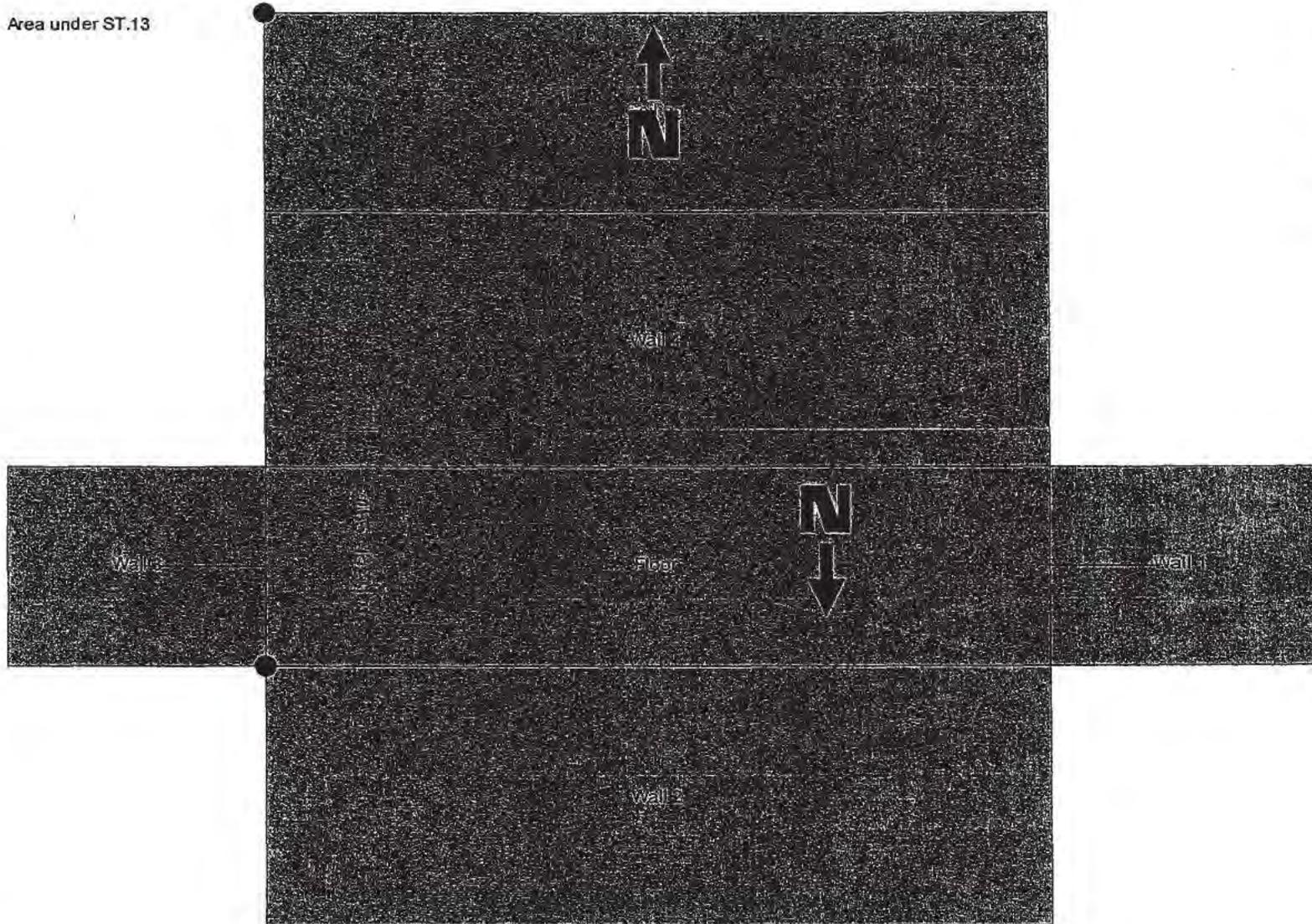
2350-1-5854/5861 cal due 7/22/06

MT-05-5888

F9/227

1C-15
Class 1 Drains, vents, and utilities

Area under ST.13



COPY

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T Bldg Room 61	SURVEY NO. MT-05-1013
PURPOSE: MASSIM SURVEY (SURVEY UNIT K-15) UPPER & LOWER STAKES ROOM 61	RWP NO. N/A
	DATE: 10-17-05
	TIME: 1045

MAP/DRAWING

MASSIM SURVEY LOWER & UPPER STAKE LOCATIONS
IN ROOM 61 NO elevated Readings (L A) detected
Note: Upper stakes on wall only, ceiling
has been removed.
See attached sheets AND NOTES Pg 9 of 11

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5889/5890	1-17-06
N/A	 	
 	 	

Completed by: (Signature) <i>Joe Wootley</i>	HP	Date: 10-18-05
Completed by: (Print Name) Joe Wootley		
Counted by: (Signature) <i>See Attached</i>	HPs: N/A	Date: N/A
Counted by: (Print Name) " "		
Reviewed/Approved by: (Signature) <i>Joe Wootley</i>	HPs	Date: 10/28/05
Reviewed/Approved by: (Print Name) Joe Wootley		

Protocol# 4 - MARSSIM_Smear_4.lsa

User: 5801

MARSSIM Smear Data

30x11
JW
10/18/05

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\20051017_1849.results
Comma-Delimited File Name: D:\MARSSIM LSC\MT-05-1013.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_4.lsa

MT-05-1013 COPY

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

5/13/227

MARSSIM Smear Data

4 of 11
10-18-05

Pg 4 of 11

B
C

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

MT 05 03

Cycle 1 Results

DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
10/17/05	6:50:34 PM	-1		10.00	7	7	11	9	623.02	0	23.3	B	4
10/17/05	7:01:24 PM	0		2.00	336	319	2	1	543.69	653	7.8		4
10/17/05	7:04:06 PM	1		2.00	1	2	0	6	455.22	3	313.8		4
10/17/05	7:06:49 PM	2		2.00	13	13	0	8	399.70	29	52.0		4
10/17/05	7:09:32 PM	3		2.00	4	4	0	13	441.46	9	119.4		4
10/17/05	7:12:13 PM	4		2.00	7	7	1	7	424.27	16	79.5		4
10/17/05	7:14:55 PM	5		2.00	9	7	0	6	502.23	19	64.7		4
10/17/05	7:17:53 PM	6		2.00	6	6	0	7	458.81	13	89.5		4
10/17/05	7:20:34 PM	7		2.00	6	5	0	8	609.58	10	95.8		4
10/17/05	7:23:18 PM	8		2.00	6	6	0	4	552.03	12	89.5		4
10/17/05	7:25:59 PM	9		2.00	8	7	0	3	582.47	14	75.4		4
10/17/05	7:28:42 PM	10		2.00	1	2	0	6	586.45	2	363.6		4
10/17/05	7:31:23 PM	11		2.00	4	4	0	4	537.46	9	116.7		4
10/17/05	7:34:05 PM	12		2.00	0	0	1	10	550.48	0	0.0		4
10/17/05	7:36:48 PM	13		2.00	3	2	0	10	583.01	5	183.2		4
10/17/05	7:39:29 PM	14		2.00	2	0	1	6	591.03	3	283.5		4
10/17/05	7:42:11 PM	15		2.00	1	1	0	6	575.85	2	400.8		4
10/17/05	7:44:53 PM	16		2.00	4	2	0	30	569.92	8	123.8		4
10/17/05	7:47:40 PM	17		2.00	2	1	0	11	578.90	3	283.5		4
10/17/05	7:50:22 PM	18		2.00	0	0	0	7	571.92	0	3695.9		4
10/17/05	7:53:05 PM	19		2.00	2	2	0	16	475.77	4	221.6		4
10/17/05	7:55:48 PM	20		2.00	11	10	0	21	372.16	26	57.6		4
10/17/05	7:58:39 PM	21		2.00	0	0	0	13	439.50	0	0.0		4
10/17/05	8:01:22 PM	22		2.00	2	2	0	5	514.74	4	221.6		4
10/17/05	8:04:05 PM	23		2.00	4	4	0	5	544.57	7	140.9		4
10/17/05	8:06:47 PM	24		2.00	10	10	1	3	536.58	20	59.7		4
10/17/05	8:09:29 PM	25		2.00	5	3	0	4	503.61	9	112.5		4
10/17/05	8:12:27 PM	26		2.00	5	4	0	4	554.39	9	112.5		4
10/17/05	8:15:09 PM	27		2.00	4	4	0	9	539.87	8	128.0		4
10/17/05	8:17:52 PM	28		2.00	7	5	0	17	564.88	13	81.6		4
10/17/05	8:20:34 PM	29		2.00	0	0	0	7	576.10	0	0.0		4
10/17/05	8:23:15 PM	30		2.00	3	2	1	10	548.08	5	185.9		4
10/17/05	8:25:58 PM	31		2.00	4	5	0	4	542.48	9	114.9		4

5/11/227

10-18-05

COPY

MT-05-1013

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_091
Batch Ended: 10/17/05 13:44
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1013 (31) 10/17/05 TAS

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.22		0.99	2.27	
A2	2	3.55	2.82		0.00	1.18	
A3	3	0.00	2.33		4.49	2.82	
A4	4	0.00	2.10		0.00	1.22	
B1	5	0.00	1.90		0.54	1.69	
B2	6	0.00	1.85		0.00	1.13	
B3	7	0.00	2.20		0.31	1.88	
B4	8	0.00	1.97		0.00	1.21	
C1	9	1.69	2.06		0.11	1.74	
C2	10	0.00	1.92		0.47	1.59	
C3	11	0.00	2.10		2.70	2.43	
C4	12	0.00	1.95		0.00	1.12	
D1	13	0.00	2.07		1.54	2.16	
D2	14	0.00	2.15		0.00	1.19	
D3	15	0.00	2.09		0.00	1.25	
D4	16	0.00	2.05		0.20	1.66	
A1	17	0.00	2.18		0.00	1.33	
A2	18	1.57	2.00		0.00	1.18	
A3	19	4.01	3.22		1.62	2.18	
A4	20	0.00	2.17		5.14	2.96	
B1	21	2.61	2.63		0.00	1.20	
B2	22	0.00	1.85		0.00	1.13	
B3	23	0.00	2.24		2.95	2.66	
B4	24	0.00	1.97		0.00	1.21	
C1	25	0.00	2.05		0.00	1.23	
C2	26	0.00	1.91		0.00	1.13	
C3	27	1.73	2.07		0.12	1.72	

F 10/22/05

9W
10/16/05
5 012/11
Page Tot 2
9W
10/16/05

9W
10/16/05

Smear Analysis

COPY

MT-05-1013

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_091
 Batch Ended: 10/17/05 13:44
 Cal. Due Date: 11/17/05
 Serial Number: 26966-3

Batch ID: MT-05-1013 (31) 10/17/05 TAS

Detector ID	Sample ID
C4	28
D1	29
D2	30
D3	31

Alpha Activity		
DPM	σ	flags
0.00	1.95	
0.00	2.05	
0.00	2.18	
0.00	2.11	

Beta Activity		
DPM	σ	flags
0.00	1.13	
0.00	1.25	
1.58	2.06	
1.42	2.15	

for
10/18/05

for
10/18/05

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 Page 2 of 2
 10/18/05
 for

for

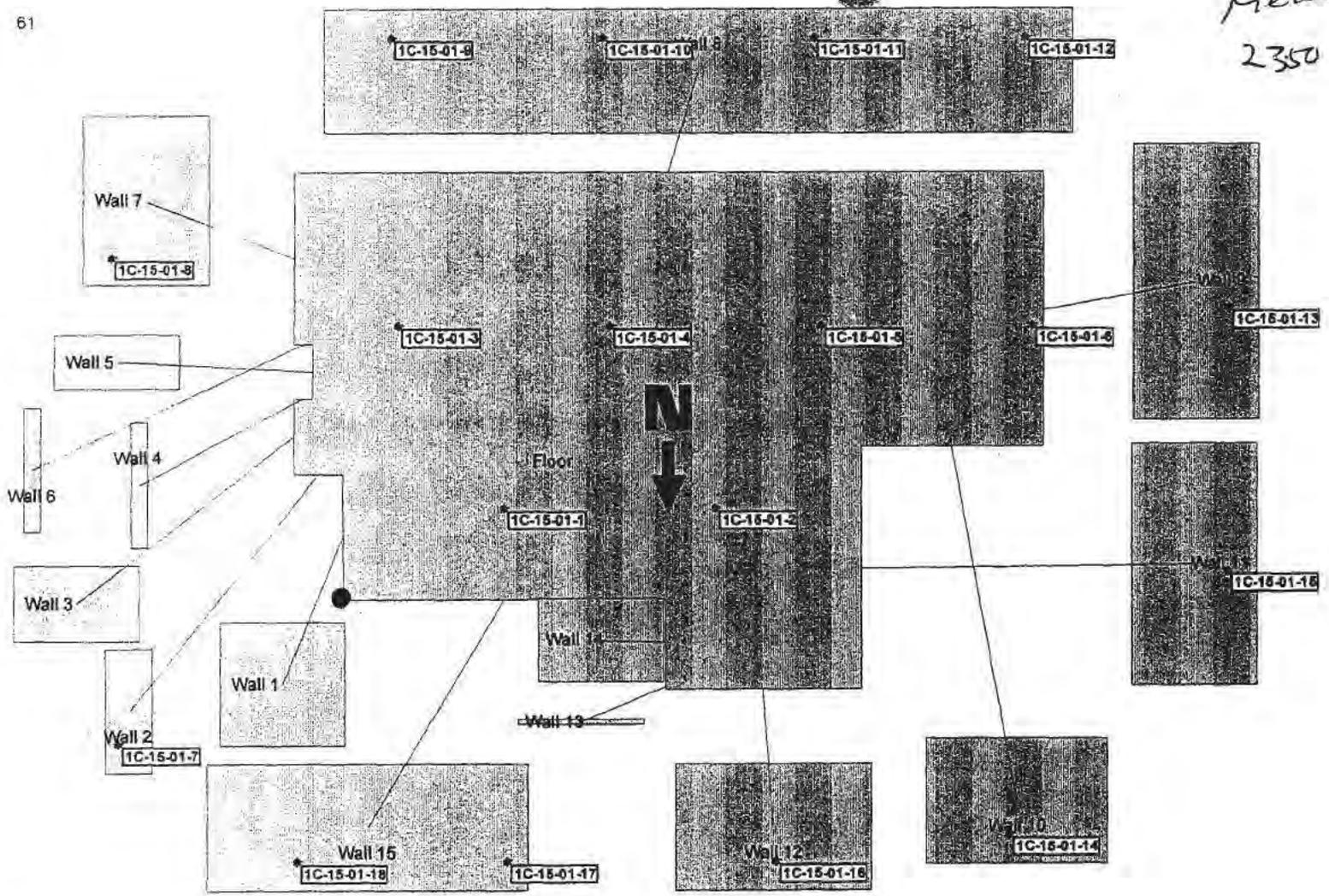
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1C-15-01 Room 61
floor and lower wall static measurement locations

COPY

MT-05-1013
Melon used
2350 5889/5890 ~~F3~~
10-17-05

61

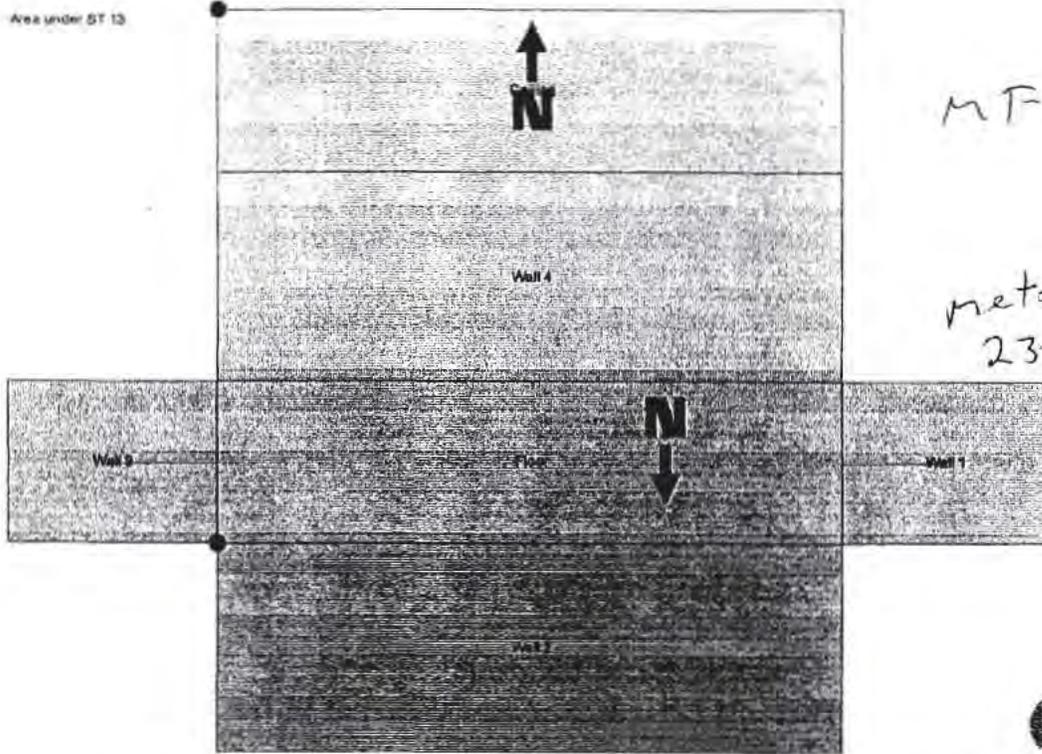


EM/229

1C-15 Stairwell 13
Class 1 Judgmentals

statics (Lower under stairwell 13)

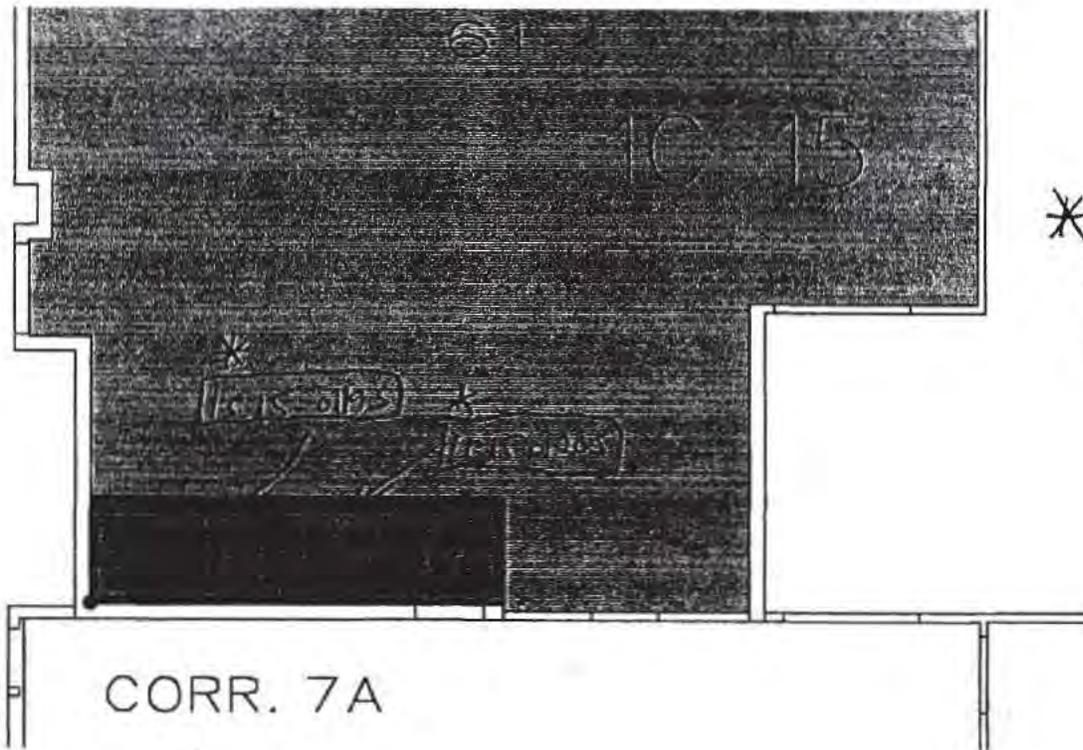
Area under ST 13



MT-05-1013

Metanused
2350-5889/5540 10174

COPY



* static
* Locations under
stairwell on
Floor

F18/227

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1C-15-02 Room 61
ceiling and upper wall static measurement locations
scan 1m² area around each ceiling location

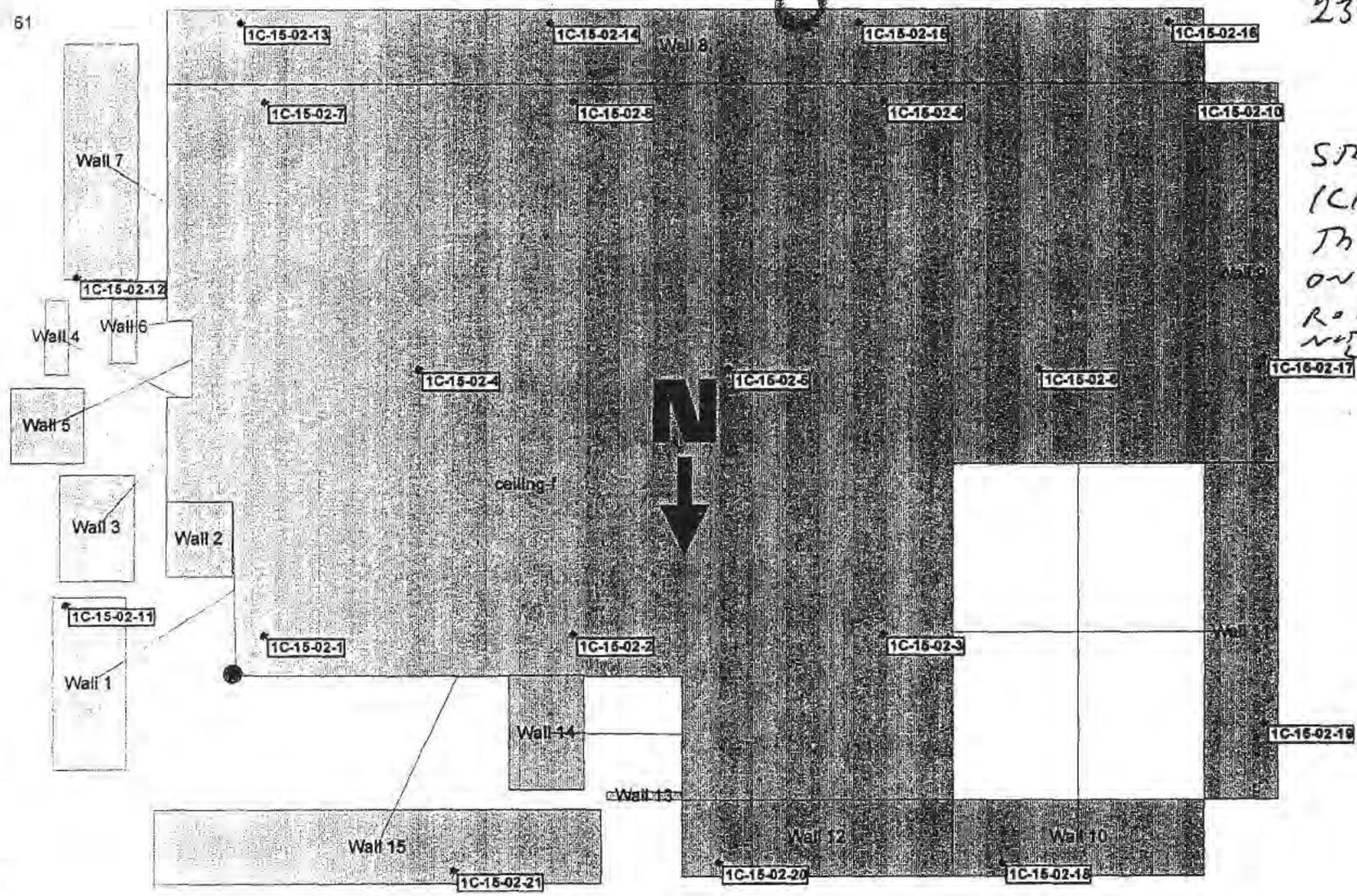
COPY

MT05-1013

meter used
2300 5859/5860
10-1705

Static locations
1C15-02015
Thru 1C15-02105
on ceiling. ceiling
Removed samples
not taken on
locations.

61



F19/227

T-Building Rm. 61 Lower and Upper Statics, Uppers Walls Only

RSDS# MT-05-1013 RCT: RCT:

Alpha	43-68 BKG:	0	EFF:	0.2177	PROBE AREA:	126	cm ²	Surface Eff:	9.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1732	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	1C150101S	5889		5890	1	1	10/15/05	8:04	22	120	80
ALPHA	1C150102S	5889		5890	1	2	10/15/05	8:08	16	120	58
ALPHA	1C150103S	5889		5890	1	3	10/15/05	8:13	20	120	73
ALPHA	1C150104S	5889		5890	1	4	10/15/05	8:17	17	120	62
ALPHA	1C150105S	5889		5890	1	5	10/15/05	8:21	14	120	51
ALPHA	1C150106S	5889		5890	1	6	10/15/05	8:24	23	120	84
ALPHA	1C150107S	5889		5890	1	7	10/15/05	8:29	4	120	15
ALPHA	1C150108S	5889		5890	1	8	10/15/05	8:33	6	120	22
ALPHA	1C150109S	5889		5890	1	9	10/15/05	8:37	6	120	22
ALPHA	1C150110S	5889		5890	1	10	10/15/05	8:41	3	120	11
ALPHA	1C150111S	5889		5890	1	11	10/15/05	8:45	5	120	18
ALPHA	1C150112S	5889		5890	1	12	10/15/05	8:48	5	120	18
ALPHA	1C150113S	5889		5890	1	13	10/15/05	8:51	5	120	18
ALPHA	1C150114S	5889		5890	1	14	10/15/05	8:55	5	120	18
ALPHA	1C150115S	5889		5890	1	15	10/15/05	8:58	4	120	15
ALPHA	1C150116S	5889		5890	1	16	10/15/05	9:02	6	120	22
ALPHA	1C150117S	5889		5890	1	17	10/15/05	9:05	1	120	4
ALPHA	1C150118S	5889		5890	1	18	10/15/05	9:09	7	120	26
ALPHA	1C150119S	5889		5890	1	19	10/15/05	9:13	19	120	69
ALPHA	1C150120S	5889		5890	1	20	10/15/05	9:16	14	120	51
ALPHA	1C150211S	5889		5890	1	21	10/15/05	10:14	9	120	33
ALPHA	1C150212S	5889		5890	1	22	10/15/05	10:18	6	120	22
ALPHA	1C150213S	5889		5890	1	23	10/15/05	10:22	7	120	26
ALPHA	1C150214S	5889		5890	1	24	10/15/05	10:27	6	120	22
ALPHA	1C150215S	5889		5890	1	25	10/15/05	10:32	4	120	15
ALPHA	1C150216S	5889		5890	1	26	10/15/05	10:36	2	120	7
ALPHA	1C150217S	5889		5890	1	27	10/15/05	10:41	6	120	22
ALPHA	1C150218S	5889		5890	1	28	10/15/05	10:45	8	120	29
ALPHA	1C150219S	5889		5890	1	29	10/15/05	10:50	4	120	15
ALPHA	1C150220S	5889		5890	1	30	10/15/05	10:55	5	120	18
ALPHA	1C150221S	5889		5890	1	31	10/15/05	10:59	10	120	36
BETA	1C150101S	5889		5890	2	1	10/15/05	8:05	130	60	1191
BETA	1C150102S	5889		5890	2	2	10/15/05	8:09	185	60	1695
BETA	1C150103S	5889		5890	2	3	10/15/05	8:14	189	60	1732
BETA	1C150104S	5889		5890	2	4	10/15/05	8:18	172	60	1576
BETA	1C150105S	5889		5890	2	5	10/15/05	8:22	185	60	1695
BETA	1C150106S	5889		5890	2	6	10/15/05	8:25	157	60	1439
BETA	1C150107S	5889		5890	2	7	10/15/05	8:30	112	60	1026
BETA	1C150108S	5889		5890	2	8	10/15/05	8:34	124	60	1136
BETA	1C150109S	5889		5890	2	9	10/15/05	8:38	131	60	1201
BETA	1C150110S	5889		5890	2	10	10/15/05	8:42	124	60	1136
BETA	1C150111S	5889		5890	2	11	10/15/05	8:46	89	60	816

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>T-61</u> <u>1C15</u>	SURVEY NO. <u>MT-05-1073</u>
PURPOSE: <u>SHONKA SCAN SURVEY</u> <u>FOLLOW UP TO SHONKA ELEVATED AREA</u> <u>RESRAD</u>	RWP NO. <u>N/A</u>
	DATE: <u>10-24-05</u>
	TIME: <u>1200</u>

MAP / DRAWING
 SHONKA SCAN SURVEY ~~1/8" 100% WHERE ACCESSIBLE 6/2/06~~
 LOCATION 1C15 0101E HAS 7071 DPM/100cm² & FIXED
 FOR SMEAR AND STATIC COUNT RESULTS SEE ATTACHED.
 SCM 23 SCAN 100% FLOOR & WALLS UP TO 2 METERS
 SCM 23 — 25% SCAN OF WALLS ABOVE 2 METERS
 Potential elevated reading detected during scan of floor.

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 (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 dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5923/5925	5-17-06
N/A		

Completed by: (Signature) <u>[Signature]</u>	Date: <u>10-25-05</u>
Completed by: (Print Name) <u>NEAL REYNOLDS</u>	
Counted by: (Signature) <u>SEE</u>	HP# <u>N/A</u> Date: <u>N/A</u>
Counted by: (Print Name) <u>ATTACHED</u>	
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>11-28-05</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

Survey No.
MT-05-1073

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	DO	Alpha	Tritium	Comments
1	SEE	ATTACHED		1C156101E
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	DO	Alpha	Tritium	Comments
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 DO, alpha, or tritium, leave column blank. Mark column N/A if not needed. If count room 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.

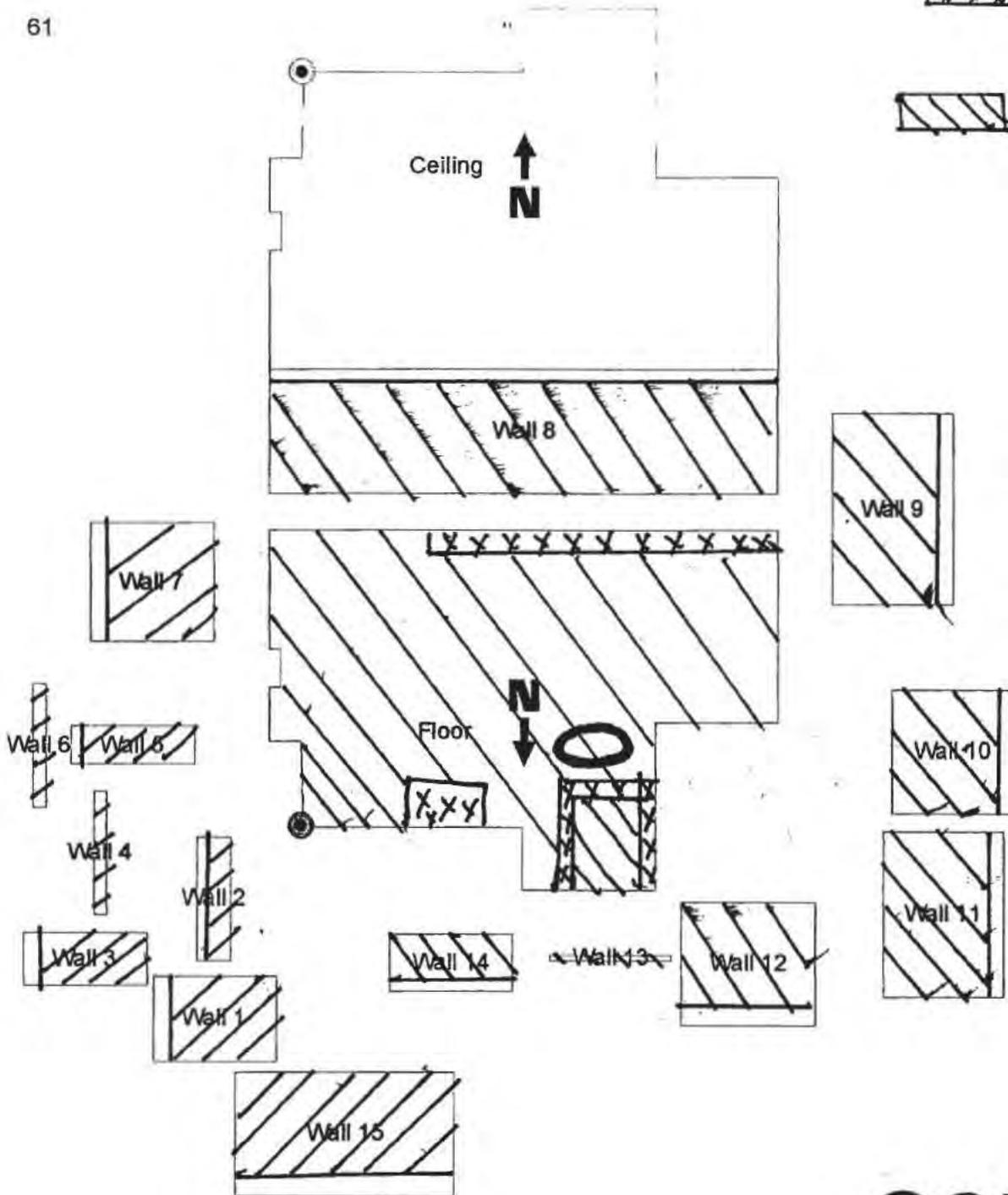
F23/227

1C-15 Room 61 Wg 4/24/06
Class 1 ~~100% of floor and lower walls up to 2 meters~~
25% scan of walls above 2 meters

SCM SCAN with
ROLLING AND CORNER
mode. SURVEY
100% where
Accessible
10-20-05

Scan an area of approximately 1 m2 around each static measurement on the ceiling

61



XXX = TRENCH

▨ = SCM SURVEY

COPY

F24/227

216 10-25-05

10/25/05 12:32:41 PM

QuantaSmart (TM) - 1.31 - Serial# 423022

Page # 1

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: D:\MARSSIM_LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_3\20051025_1216.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1073.001
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

COPY
F25/227

4 of 22
PAGE 3 of 22
MT-05-1073
RTH

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#
10/25/05	12:16:41 PM	-1		10.00	9	9	9	3	619.82	0	20.8	B	3
10/25/05	12:27:27 PM	0		2.00	242	229	0	1	522.29	479	9.3		3
10/25/05	12:30:11 PM	1		2.00	1	0	2	20	279.53	2	726.1		3

✓_{nr}

COPY

12/6/2007

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PAGE 4
4/24/04
MT-05-1073

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_140
Batch Ended: 10/25/05 10:33
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1073 (1) REYNOLDS 10-25-05 RLH ✓

Detector ID	Sample ID
B1	1

Alpha Activity		
DPM	σ	flags
0.00	1.88	

✓na

Beta Activity		
DPM	σ	flags
0.00	1.20	

✓na

COPY

F27/227

6 of 20
S. J. G. E. ✓
10/25/05
MT-05-1073
RL

T-Bldg. Rm. 61 follow up to Shonka elevated area

RSDS# MT-05-1073

RCT: ████

RCT: N/A

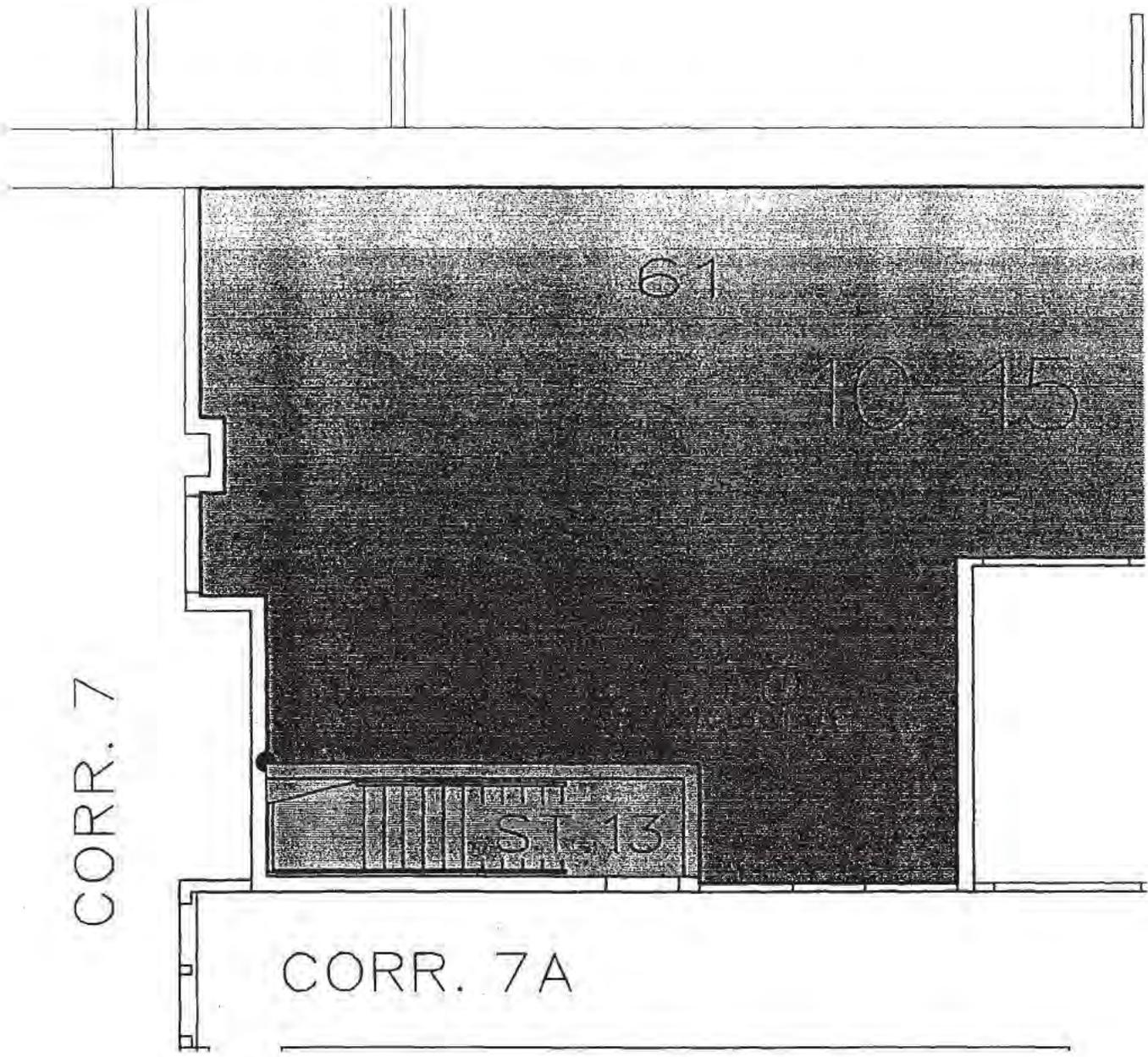
Alpha	43-68 BKG:	0	EFF:	0.2073	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1579	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	1C150101E	5923	████	5925	1	1	10/24/05	12:16	1847	120	7071
BETA	1C150101E	5923	████	5925	2	1	10/24/05	12:17	420	60	4225

COPY

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 Page 6 of 7
 4/24/09

F28/227

1C-15 Room 61
Class 1



COPY

F29/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>T-61</u>	<u>1C15</u>	SURVEY NO. <u>MT-05-1104</u>
PURPOSE: <u>POST ACID ETCH SURVEY</u>	RWP NO. <u>N/A</u>	DATE: <u>10-28-05</u>
	TIME: <u>1400</u>	

MAP / DRAWING

COPY

PRIOR TO ACID ETCH, LOCATION 1C150101E HAD 7071 DPM/100cm². REFERENCE MT-05-1073

DIRECT READING AFTER ACID ETCH FOR 1C150101EAE IS 13 DPM/100 cm².

FOR SMEAR AND STATIC COUNT RESULTS SEE ATTACHED

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



or /β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5924/5929	5-9-06
 	 	
 	 	

Completed by: (Signature) <u>Neal Reynolds</u>	Date: <u>10-31-05</u>
Completed by: (Print Name) <u>NEAL REYNOLDS</u>	
Counted by: (Signature) <u>SEE</u>	HP# <u>N/A</u> Date: <u>10-28-05</u>
Counted by: (Print Name) <u>ATTACHED</u>	
Reviewed/Approved by: (Signature) <u>Jerry Taylor</u>	Date: <u>10-28-05</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

F30/1227 *Amc*

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\20051031_0920.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1104.001
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-

Regions	Half Life	Units	Reference Date	Reference Time
A				

F32/227

COPY

PAGE 3 of 7
MT-05-1104
RHH

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#
10/31/05	9:20:44 AM	-1		10.00	9	8	11	2	622.42	0	21.5	B	1
10/31/05	9:31:27 AM	0		2.00	519	487	1	0	548.62	1003	6.3		1
10/31/05	9:34:09 AM	1		2.00	7	6	2	19	441.94	15	86.1		1

Vine

F33/227

COPY

*PAGE 4 of 7
MT-05-1104*

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_164
Batch Ended: 10/31/05 8:55
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1104 [1] REYNOLDA 10-31-05 RLH ✓

Detector ID	Sample ID
B2 ✓	1

Alpha Activity		
DPM	σ	flags
0.00	1.87	

Beta Activity		
DPM	σ	flags
0.00	1.59	

✓na

✓na

COPY

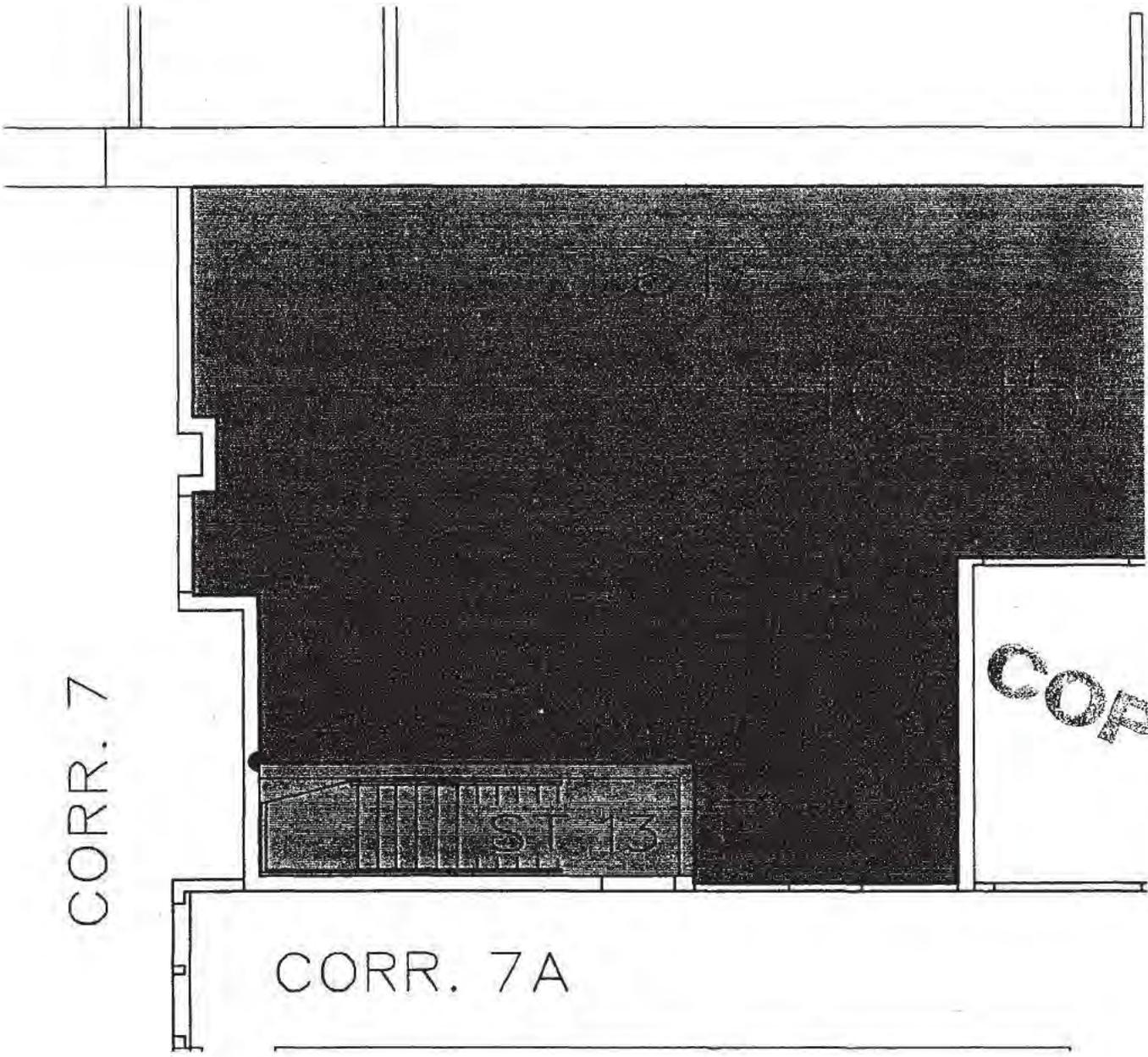
Page 1 of 1
nr 10-31-05

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RLH

10-31-05
227

1C-15 Room 61
Class 1



CORR. 7

CORR. 7A

COPY

RADIOLOGICAL SURVEY DATA SHEET

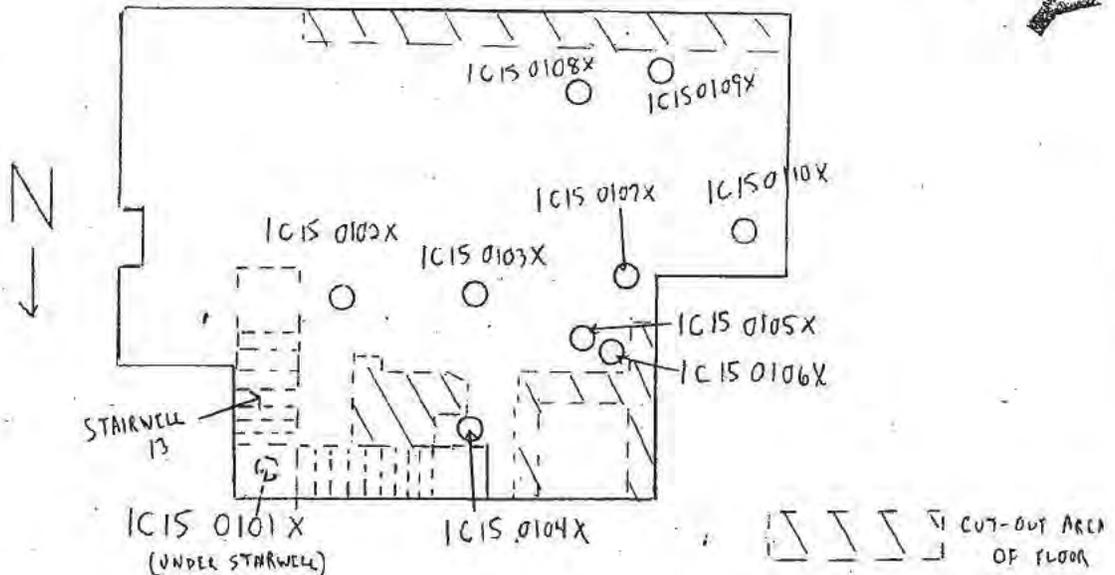
LOCATION: (BLDG/AREA/ROOM) T-BLDG Room 61 (1C15)	SURVEY NO. MT-05-1153
PURPOSE: Investigational Survey of Suspected Elevated Spots (Res Rad Survey)	RWP NO. N/A
	DATE: 11-7-05
	TIME: 1530

MAP/DRAWING

See Attachment for α/β readings

= Room 61

COPY



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



= mrem/hr neutron



= swipe number



= air sample number



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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5857, 5859	10-4-06
N/A	N/A	N/A

Completed by: (Signature) <i>T. King</i>	HF	Date: 11-7-05
Completed by: (Print Name) T. King		
Counted by: (Signature) N/A	HP# N/A	Date: N/A
Counted by: (Print Name) N/A		
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>		Date: 11-10-05
Reviewed/Approved by: (Print Name) Jerry Taylor		

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 6 ^{7/22-05 54/1-25-05} 9/18/12

LOCATION: (BLDG/AREA/ROOM)	T-61 IC15	SURVEY NO.	MT-05-1180
PURPOSE:	POST JOB SURVEY / RESRAD	RWP NO.	1623
		DATE:	11/11/05
		TIME:	1600

MAP/DRAWING

FOR ANALYTICAL RESULTS, SEE PAGES 7, 8, & 9

SEE pg 2 FOR SMEAR LOCATIONS —

SEE pg 4 and 5 FOR SMEAR RESULTS —

SEE pg 6 FOR MAP —



COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L-3030	5825	4/18/06
L-3030	5817	6/20/06
	N/A	

Completed by: (Signature)	HP#	Date:
<i>Scott Hollabaugh</i>		7/11/05
Completed by: (Print Name)	SCOTT HOLLABAUGH	
Counted by: (Signature)	HP#	Date:
SEE ATTACHED	N/A	N/A
Counted by: (Print Name)	SHEETS	
Reviewed/Approved by: (Signature)		Date:
<i>Scott Hollabaugh</i>		7/27/05
Reviewed/Approved by: (Print Name)	J. HOLLABAUGH	

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
1	SEE	ATTACHED		FLOOR
2	∧	∧	∧	∧
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17	∨	∨	∨	FLOOR
18	∨	∨	∨	FLOOR
N/A				

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

COMMENTS: ALL SMears FIELD SCREENED PRIOR TO COUNT
LAB → (SH)

- NOTES:
- See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
 - 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.
 - Annotate special sample type (e.g. soil, water), special identifiers or otherwise in Comments. If needed, mark N/A.

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F41/227

MARSSIM Smear Data

Pg 3 of 12
MT-05-1180

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\20051114_1325.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1180.001 ✓
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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Pg 4 of 12
MT-05-1180

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#
11/14/05	1:26:11 PM	-1		10.00	9	8	11	10	610.10	0	21.3	B	2
11/14/05	1:37:01 PM	0		2.00	515	486	0	0	576.24	972	6.3		2
11/14/05	1:39:44 PM	1		2.00	0	0	0	14	477.18	0	0.0		2
11/14/05	1:42:25 PM	2		2.00	0	0	2	12	478.93	0	0.0		2
11/14/05	1:45:08 PM	3		2.00	0	0	0	13	458.83	0	0.0		2
11/14/05	1:47:50 PM	4		2.00	1	1	1	19	468.09	3	365.6		2
11/14/05	1:50:31 PM	5		2.00	0	0	0	20	445.70	0	0.0		2
11/14/05	1:53:13 PM	6		2.00	0	0	0	12	499.02	0	0.0		2
11/14/05	1:55:53 PM	7		2.00	17	14	0	4	486.60	34	44.2		2
11/14/05	1:58:35 PM	8		2.00	3	3	0	13	529.86	6	163.9		2
11/14/05	2:01:19 PM	9		2.00	1	1	1	16	408.70	2	677.9		2
11/14/05	2:04:02 PM	10		2.00	7	7	0	13	432.00	15	87.7		2
11/14/05	2:06:43 PM	11		2.00	0	0	1	11	515.57	0	2319.5		2
11/14/05	2:09:25 PM	12		2.00	0	0	0	14	403.68	0	0.0		2
11/14/05	2:12:09 PM	13		2.00	0	0	0	0	310.38	0	0.0		2
11/14/05	2:14:52 PM	14		2.00	6	5	0	7	432.63	13	99.6		2
11/14/05	2:17:35 PM	15		2.00	0	1	1	16	376.88	1	1604.8		2
11/14/05	2:20:16 PM	16		2.00	0	0	0	24	400.07	0	0.0		2
11/14/05	2:23:20 PM	17		2.00	0	0	0	13	407.71	0	0.0		2
11/14/05	2:26:02 PM	18		2.00	2	1	0	5	570.87	4	229.6		2

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F43/227

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MT-05-1180

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_054
Batch Ended: 11/14/05 9:22
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1180 S. HOLLABAUGH [18] GWD

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.23		2.30	2.62	
A2	2	0.00	2.03		1.59	2.02	
A3	3	0.00	2.27		0.00	1.27	
A4	4	0.00	2.10		0.00	1.22	
B1	5	0.00	1.88		0.00	1.21	
B2	6	1.33	1.90		0.82	1.94	
B3	7	0.00	2.18		0.00	1.34	
B4	8	0.00	1.99		0.37	1.70	
C1	9	0.00	2.06		0.26	1.74	
C2	10	1.41	1.98		4.80	2.76	
C3	11	0.00	2.06		0.00	1.22	
C4	12	0.00	1.98		1.74	1.95	
D1	13	0.00	2.07		1.54	2.16	
D2	14	0.00	2.15		0.00	1.19	
D3	15	0.00	2.13		2.66	2.48	
D4	16	0.00	2.04		0.00	1.17	
A1	17	0.00	2.23		2.30	2.62	
A2	18	0.00	2.02		0.42	1.65	

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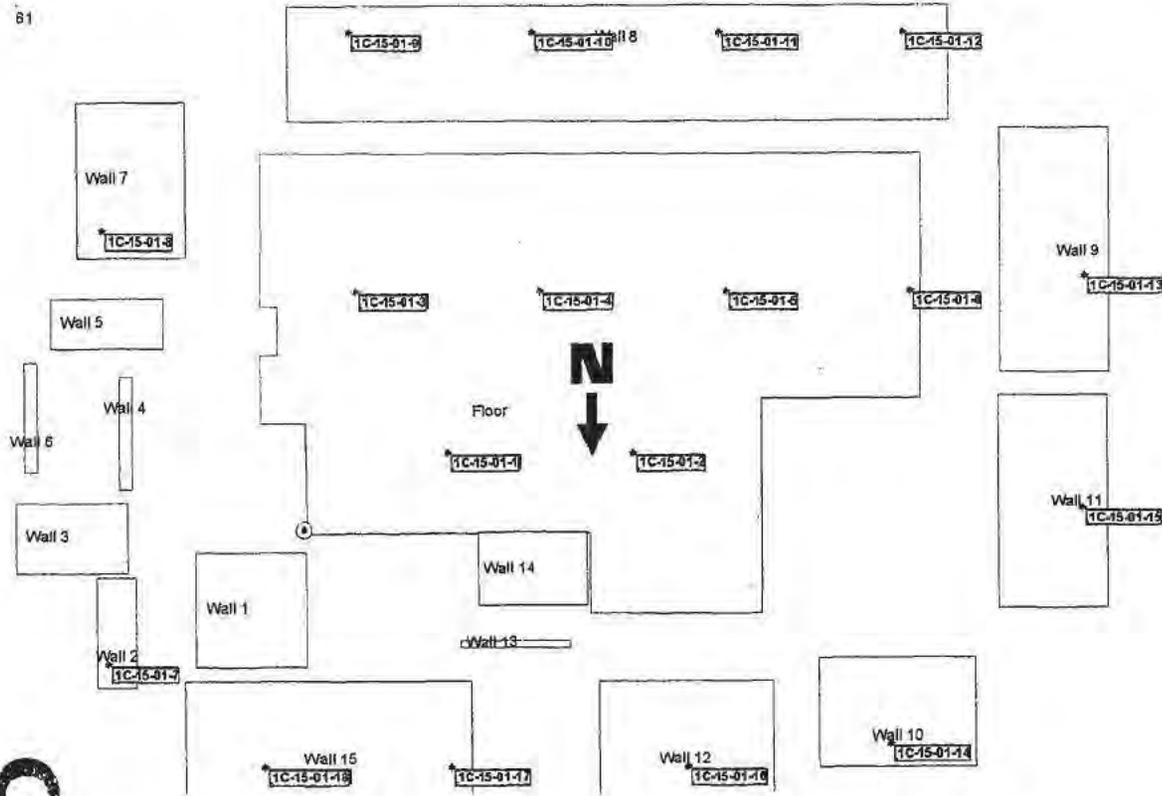
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F44/227

1C-15-01 Room 61
 floor and lower wall static measurement locations

After a direct alpha and beta measurement are taken and the smear is taken,
 then collect a bulk sample at each static location on the floor.
 Composite bulk sample with bulk samples taken at judgmental locations on the floor.

81



Area: 61				
Label	Type	Surface	LX	LY
1C-15-01-1	Systematic	Floor	9	5
1C-15-01-2	Systematic	Floor	21	5
1C-15-01-3	Systematic	Floor	3	15
1C-15-01-4	Systematic	Floor	15	15
1C-15-01-5	Systematic	Floor	27	15
1C-15-01-6	Systematic	Floor	38	15
Area: Area under ST.13				
Label	Type	Surface	LX	LY
1C-15-01-19	Systematic	Floor	0	1
1C-15-01-20	Systematic	Floor	12	1

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MT-05-1180
 M.L. 1-30-04
 Reg 7 of 12

SOIL ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL08742
 File ID: 25000095.s0
 Priority: Yes

Description/Location

T-61
 Long Count

Collector:
 Date Received: 11/17/05
 Date Collected: 11/11/05

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0.11	0.16
Cs-137	*	0	0.06
Pb-210	*	0.13	0.57
Ra-226	*	0.44	0.82
Ac-227 (D)	*	0	0.28
Th-230	*	0	5.97
Th-232 (D)	*	0.4	0.68
Pu-238	*	0.41	4.19
Am-241	*	0	0.06

COPY

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Σ _{DOT} 0.01 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:

Date: 11/21/05 Counted By: Analyzed By: Initials: CS

F49/
/227

COPY

Laboratory ID#: 0600345 & 0600346
Project/function: T Bldg.
Submitted: Nov. 11, 2005
Submitted by: Jared Hollabaugh
Point of Contact: R. Coblenz 608-8206
RSDS#: Concrete Dust
Date: Jan. 26, 2006

Lab ID: 0600345
Sample Location: T-61

Isotope	pCi/g	Uncertainty +/-	LDL
Am-241	0.05	0.01	0.01
Pu238	<LDL	0.01	0.04
Pu-239	<LDL	0.01	0.04

Lab ID: 0600346
Sample Location: T-63

Isotope	pCi/g	Uncertainty +/-	LDL
Am-241	0.10	0.02	0.07
Pu238	<LDL	0.01	0.09
Pu-239	<LDL	0.01	0.03

Charles A. Phillips [Redacted] 1/26/06
Analyst HP# Date

Guy DeBono [Redacted] 1/26/06
Data Verification HP# Date

COPY
F51/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: BLDG AREA/ROOM <i>T BLDG Rm 61</i>	SURVEY NO <i>MT-06-0109</i>
<i>upper & lower Judgemental</i>	RWP NO <i>N/A</i>
<i>1C15</i>	DATE <i>1/30/06</i>
	TIME <i>1230</i>

MAP / DRAWING

COPY

All attached map

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 dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<i>2350</i>	<i>5895</i>	<i>2/5/06</i>
 	 	
 	 	
 	 	

Completed by: (Signature) <i>Wayne Jones</i>	Date: <i>1/30/06</i>
Completed by: (Print Name) <i>Wayne Jones</i>	
Counted by: (Signature) <i>see attached</i>	Date: <i> </i>
Counted by: (Print Name) <i> </i>	
Reviewed/Approved by: (Signature) <i>Jess Griffith</i>	Date: <i>2/6/06</i>
Reviewed/Approved by: (Print Name) <i>Jess Griffith</i>	

F52/227 RMC

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
1	See attached			1C150101J
2				1C150102J
3				1C150103J
4				1C150104J
5				1C150105J
6				1C150106J
7				1C150107J
8				1C150108J
9				1C150109J
10				1C150110J
11				1C150201J
12				1C150202J
13				1C150203J
14				1C150204J
15				1C150205J
16				1C150206J
17				1C150207J
18				1C150208J
19				1C150209J
20				1C150210J
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
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67				
68				
69				
70				

COMMENTS:

- 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.

111 T-06-0109
Pg 3 of 8

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_081
Batch Ended: 1/30/06 12:50
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0109 [20] JONES 1-30-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	1.72	2.21		1.60	2.26	
A2	2	0.00	2.04		2.67	2.33	
A3	3	0.00	2.33		4.18	2.81	
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	2.22		1.52	2.29	
B4	8	0.00	1.95		0.00	1.19	
C1	9	0.00	2.05		0.00	1.23	
C2	10	0.00	1.91		0.00	1.12	
C3	11	0.00	2.12		5.13	2.99	
C4	12	0.00	1.95		0.00	1.12	
D1	13	1.76	2.05		0.00	1.25	
D2	14	0.00	2.18		1.58	2.06	
D3	15	0.00	2.09		0.00	1.24	
D4	16	0.00	2.05		0.20	1.66	
C1	17	0.00	2.05		0.00	1.23	
C2	18	0.00	1.91		0.00	1.12	
C3	19	0.00	2.06		0.00	1.22	
C4	20	0.00	1.96		0.62	1.59	

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wj

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154/229

Ret

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\20060130_1334.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0109.001
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



87478

MT-06-0109

1-55/227

Ret

Protocol# 2 - MARSSIM_Smear_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

copy

Cycle 1 Results

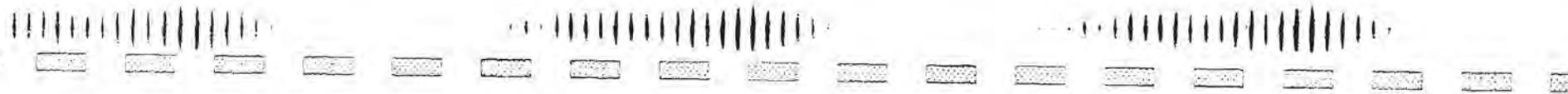
DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	A:2S%	MESSAGES	P#
1/30/06	1:35:09 PM	-1		10.00	7	6	12	1	619.55	0	24.7	B	2
1/30/06	1:45:52 PM	0		2.00	130	123	0	1	536.53	253	12.8		2
1/30/06	1:48:34 PM	1		2.00	14	10	0	57	506.83	29	46.4		2
1/30/06	1:51:17 PM	2		2.00	7	6	1	46	478.04	15	76.1		2
1/30/06	1:54:00 PM	3		2.00	5	4	0	26	483.85	10	102.9		2
1/30/06	1:56:41 PM	4		2.00	13	12	11	0	567.80	26	48.7		2
1/30/06	1:59:22 PM	5		2.00	7	5	0	7	603.95	14	74.6		2
1/30/06	2:02:06 PM	6		2.00	7	6	0	11	588.33	14	74.6		2
1/30/06	2:04:48 PM	7		2.00	3	2	0	11	594.05	5	159.2		2
1/30/06	2:07:28 PM	8		2.00	2	3	0	22	618.83	4	187.6		2
1/30/06	2:10:10 PM	9		2.00	6	5	0	15	628.67	11	85.1		2
1/30/06	2:12:52 PM	10		2.00	2	2	0	18	636.92	3	233.6		2
1/30/06	2:15:33 PM	11		2.00	5	5	0	13	550.69	9	102.9		2
1/30/06	2:18:14 PM	12		2.00	9	9	0	0	573.76	18	62.9		2
1/30/06	2:20:57 PM	13		2.00	3	3	0	5	563.22	5	173.1		2
1/30/06	2:23:38 PM	14		2.00	2	2	0	11	570.31	5	187.6		2
1/30/06	2:26:20 PM	15		2.00	6	5	0	8	563.22	12	83.3		2
1/30/06	2:29:02 PM	16		2.00	10	9	1	6	557.63	18	61.8		2
1/30/06	2:31:50 PM	17		2.00	4	4	0	4	583.35	8	110.8		2
1/30/06	2:34:31 PM	18		2.00	2	0	0	33	579.03	5	187.6		2
1/30/06	2:37:14 PM	19		2.00	3	3	0	21	574.66	5	162.9		2
1/30/06	2:39:58 PM	20		2.00	5	4	0	4	567.62	10	98.0		2

wj

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5010-90-1009
M7-06-0109

56
1227

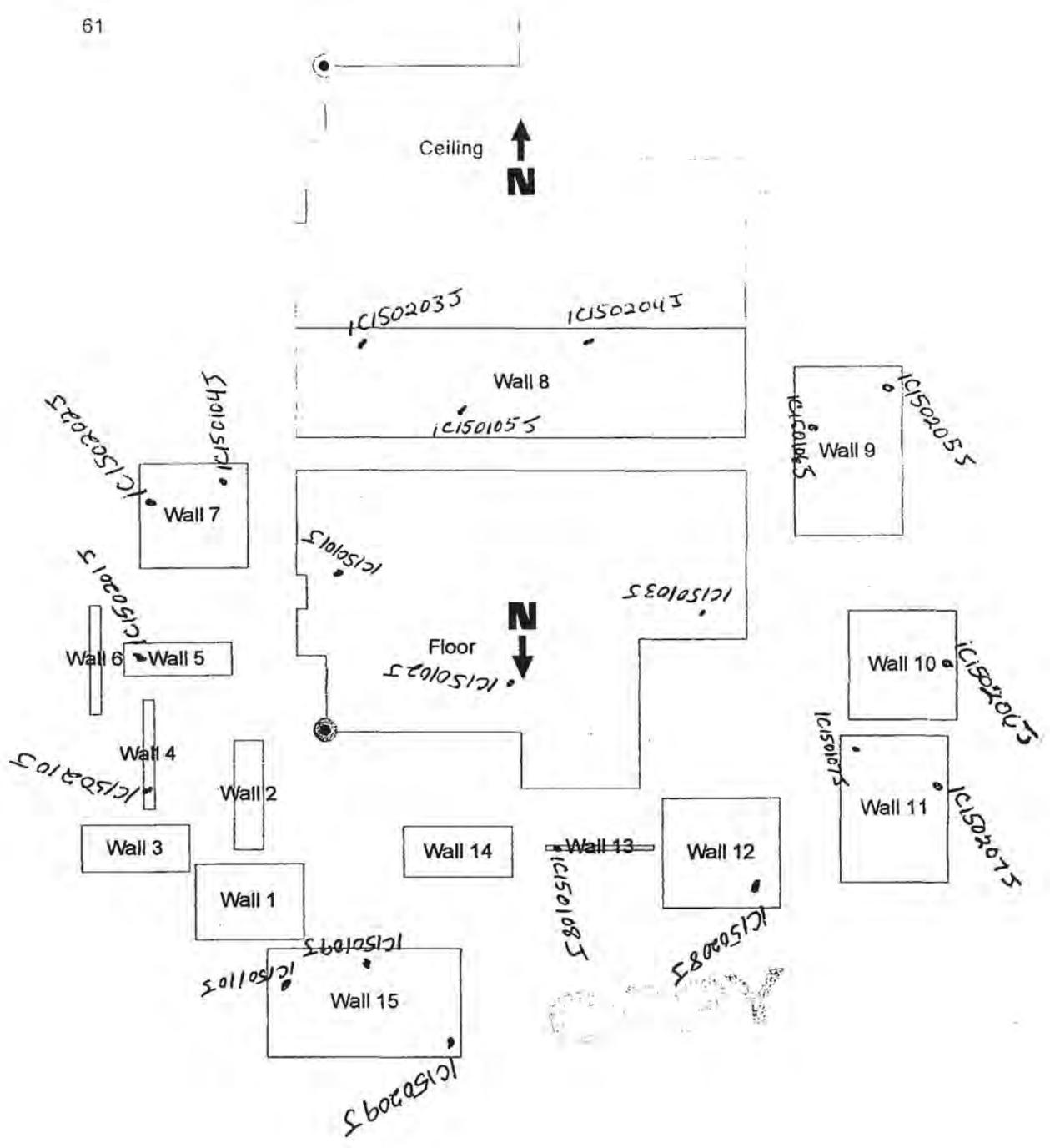


MT-06-0109

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1C-15 Room 61 Judgmentals

61



T-Building upper and lower judgemental Survey 1c-15 room 61

RSDS# mt-06-0109

RCT:

RCT:

Alpha	43-68 BKG:	0	EFF:	0.216	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.17	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.21	PROBE AREA:	504	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	1C150101J	5895		5896	1	1	1/30/06	7:14	16	120	59
ALPHA	1C150102J	5895		5896	1	2	1/30/06	7:20	13	120	48
ALPHA	1C150103J	5895		5896	1	3	1/30/06	7:25	11	120	40
ALPHA	1C150104J	5895		5896	1	4	1/30/06	7:30	1	120	4
ALPHA	1C150105J	5895		5896	1	5	1/30/06	7:34	3	120	11
ALPHA	1C150106J	5895		5896	1	6	1/30/06	7:39	4	120	15
ALPHA	1C150107J	5895		5896	1	7	1/30/06	7:43	3	120	11
ALPHA	1C150108J	5895		5896	1	8	1/30/06	7:47	4	120	15
ALPHA	1C150109J	5895		5896	1	9	1/30/06	7:51	2	120	7
ALPHA	1C150110J	5895		5896	1	10	1/30/06	7:55	7	120	26
ALPHA	1C150201J	5895		5896	1	11	1/30/06	9:44	2	120	7
ALPHA	1C150202J	5895		5896	1	12	1/30/06	9:48	5	120	18
ALPHA	1C150203J	5895		5896	1	13	1/30/06	9:53	9	120	33
ALPHA	1C150204J	5895		5896	1	14	1/30/06	9:57	6	120	22
ALPHA	1C150205J	5895		5896	1	15	1/30/06	10:01	1	120	4
ALPHA	1C150206J	5895		5896	1	16	1/30/06	10:06	2	120	7
ALPHA	1C150207J	5895		5896	1	17	1/30/06	10:10	2	120	7
ALPHA	1C150208J	5895		5896	1	18	1/30/06	10:14	3	120	11
ALPHA	1C150209J	5895		5896	1	19	1/30/06	10:18	5	120	18
ALPHA	1C150210J	5895		5896	1	20	1/30/06	10:22	5	120	18
BETA	1C150101J	5895		5896	2	21	1/30/06	7:15	151	60	1410
BETA	1C150102J	5895		5896	2	22	1/30/06	7:21	117	60	1092
BETA	1C150103J	5895		5896	2	23	1/30/06	7:26	140	60	1307
BETA	1C150104J	5895		5896	2	24	1/30/06	7:31	111	60	1036
BETA	1C150105J	5895		5896	2	25	1/30/06	7:35	96	60	896
BETA	1C150106J	5895		5896	2	26	1/30/06	7:40	115	60	1074
BETA	1C150107J	5895		5896	2	27	1/30/06	7:44	104	60	971
BETA	1C150108J	5895		5896	2	28	1/30/06	7:48	93	60	868
BETA	1C150109J	5895		5896	2	29	1/30/06	7:52	102	60	952
BETA	1C150110J	5895		5896	2	30	1/30/06	7:56	76	60	710
BETA	1C150201J	5895		5896	2	31	1/30/06	9:45	103	60	962
BETA	1C150202J	5895		5896	2	32	1/30/06	9:50	133	60	1242
BETA	1C150203J	5895		5896	2	33	1/30/06	9:54	78	60	728
BETA	1C150204J	5895		5896	2	34	1/30/06	9:58	73	60	682
BETA	1C150205J	5895		5896	2	35	1/30/06	10:03	116	60	1083
BETA	1C150206J	5895		5896	2	36	1/30/06	10:07	125	60	1167
BETA	1C150207J	5895		5896	2	37	1/30/06	10:11	103	60	962
BETA	1C150208J	5895		5896	2	38	1/30/06	10:15	116	60	1083
BETA	1C150209J	5895		5896	2	39	1/30/06	10:19	86	60	803
BETA	1C150210J	5895		5896	2	40	1/30/06	10:24	91	60	850
	N/A										

F59/227

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 7-10
 11 4-10-06
 Du
 3-3-06

LOCATION: (BLDG./AREA/ROOM) T-BLDG Room 61	SURVEY NO. MT-06-0346
PURPOSE: Post Remediation RESRAD ICIS	RWP NO. N/A
	DATE: 3-22-06
	TIME: 1600

MAP/DRAWING

See Map For Locations of 18 Static Readings
 See Attached Results

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5857/5859	10-4-06
N/A		
A		

Completed by: (Signature) <i>Julie Kardas / Jan Gauthier</i>	Date: 3-22-06
Completed by: (Print Name) Julie Kardas / Jan Gauthier	
Counted by: (Signature) <i>see Attached Results</i>	HP# N/A
Counted by: (Print Name) <i>see Attached Results</i>	Date: N/A
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: F60/227
Reviewed/Approved by: (Print Name) Jerry Taylor	Date: 4-3-06

Survey No. MT-06-0346

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
1				See Attached Results IC150101R
2				IC150102R
3				IC150103R
4				IC150104R
5				IC150105R
6				IC150106R
7				IC150107R
8				IC150108R
9				IC150109R
10				IC150110R
11				IC150111R
12				IC150112R
13				IC150113R
14				IC150114R
15				IC150115R
16				IC150116R
17	↓	↓	↓	IC150117R
18				See Attached Results IC150118R
N/A				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β/γ	Alpha	Tritium	Comments
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 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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pg. 3 of 7/11
 to 4/10
 DW
 351-06

T-Building 1C15 Room 61

RSDS# MT-06-0346

RCT: [REDACTED]

RCT: [REDACTED]

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
Alpha	43-68 BKG:	0	EFF:	0.208 ✓	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.164 ✓	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	N/A	PROBE AREA:	564	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
ALPHA	1C150101R	5857	[REDACTED]	5859	1	1	3/22/06	8:36	12	120	46
ALPHA	1C150102R	5857	[REDACTED]	5859	1	2	3/22/06	8:40	16	120	61
ALPHA	1C150103R	5857	[REDACTED]	5859	1	3	3/22/06	8:43	14	120	53
ALPHA	1C150104R	5857	[REDACTED]	5859	1	4	3/22/06	9:24	9	120	34
ALPHA	1C150105R	5857	[REDACTED]	5859	1	5	3/22/06	9:29	31	120	118
ALPHA	1C150106R	5857	[REDACTED]	5859	1	6	3/22/06	9:33	9	120	34
ALPHA	1C150107R	5857	[REDACTED]	5859	1	7	3/22/06	9:37	9	120	34
ALPHA	1C150108R	5857	[REDACTED]	5859	1	8	3/22/06	9:41	11	120	42
ALPHA	1C150109R	5857	[REDACTED]	5859	1	9	3/22/06	9:44	10	120	38
ALPHA	1C150110R	5857	[REDACTED]	5859	1	10	3/22/06	9:48	15	120	57
ALPHA	1C150111R	5857	[REDACTED]	5859	1	11	3/22/06	9:51	6	120	23
ALPHA	1C150112R	5857	[REDACTED]	5859	1	12	3/22/06	9:56	165	120	630
ALPHA	1C150113R	5857	[REDACTED]	5859	1	13	3/22/06	11:58	15	120	57
ALPHA	1C150114R	5857	[REDACTED]	5859	1	14	3/22/06	12:27	7	120	27
ALPHA	1C150115R	5857	[REDACTED]	5859	1	15	3/22/06	12:41	32	120	122
ALPHA	1C150116R	5857	[REDACTED]	5859	1	16	3/22/06	12:58	3	120	11
ALPHA	1C150117R	5857	[REDACTED]	5859	1	17	3/22/06	13:15	10	120	38
ALPHA	1C150118R	5857	[REDACTED]	5859	1	18	3/22/06	13:33	3	120	11 ✓
BETA	1C150101R	5857	[REDACTED]	5859	2	1	3/22/06	8:37	190	60	1839
BETA	1C150102R	5857	[REDACTED]	5859	2	2	3/22/06	8:41	169	60	1636
BETA	1C150103R	5857	[REDACTED]	5859	2	3	3/22/06	8:44	187	60	1810
BETA	1C150104R	5857	[REDACTED]	5859	2	4	3/22/06	9:25	182	60	1762
BETA	1C150105R	5857	[REDACTED]	5859	2	5	3/22/06	9:30	196	60	1897
BETA	1C150106R	5857	[REDACTED]	5859	2	6	3/22/06	9:34	132	60	1278
BETA	1C150107R	5857	[REDACTED]	5859	2	7	3/22/06	9:38	145	60	1403
BETA	1C150108R	5857	[REDACTED]	5859	2	8	3/22/06	9:42	165	60	1597
BETA	1C150109R	5857	[REDACTED]	5859	2	9	3/22/06	9:45	126	60	1220
BETA	1C150110R	5857	[REDACTED]	5859	2	10	3/22/06	9:49	180	60	1742
BETA	1C150111R	5857	[REDACTED]	5859	2	11	3/22/06	9:53	179	60	1732
BETA	1C150112R	5857	[REDACTED]	5859	2	12	3/22/06	9:57	274	60	2652
BETA	1C150113R	5857	[REDACTED]	5859	2	13	3/22/06	11:59	239	60	2313
BETA	1C150114R	5857	[REDACTED]	5859	2	14	3/22/06	12:28	161	60	1558
BETA	1C150115R	5857	[REDACTED]	5859	2	15	3/22/06	12:43	153	60	1481
BETA	1C150116R	5857	[REDACTED]	5859	2	16	3/22/06	12:59	136	60	1316
BETA	1C150117R	5857	[REDACTED]	5859	2	17	3/22/06	13:17	173	60	1674
BETA	1C150118R	5857	[REDACTED]	5859	2	18	3/22/06	13:35	186	60	1800 ✓
N/A											

COPY

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\20060322_1625.results
Comma-Delimited File Name: D:\MARSSIM LSC\MT-06-0346.001
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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6/22/07

4-10-06 per
Page 4 of 5
Pg 4 of 11
3/24/06

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#
3/22/06	4:25:48 PM	-1		10.00	8	7	9	17	605.92	0	22.1	B	1
3/22/06	4:36:37 PM	0		2.00	298	284	1	0	536.89	582	8.3		1
3/22/06	4:39:20 PM	1		2.00	1	1	0	10	553.97	3	343.8		1
3/22/06	4:42:02 PM	2		2.00	5	5	0	7	548.73	10	103.8		1
3/22/06	4:44:44 PM	3		2.00	11	9	0	13	563.37	22	57.5		1
3/22/06	4:47:27 PM	4		2.00	6	4	0	21	422.41	13	96.4		1
3/22/06	4:50:10 PM	5		2.00	7	7	0	10	501.55	14	84.8		1
3/22/06	4:52:52 PM	6		2.00	3	1	0	14	479.01	5	190.6		1
3/22/06	4:55:36 PM	7		2.00	10	9	1	5	573.25	19	61.6		1
3/22/06	4:58:18 PM	8		2.00	10	10	0	5	564.35	20	61.6		1
3/22/06	5:01:03 PM	9		2.00	8	8	4	6	522.94	16	72.6		1
3/22/06	5:03:46 PM	10		2.00	11	11	0	8	506.19	22	59.5		1
3/22/06	5:06:29 PM	11		2.00	12	12	0	7	561.07	23	55.1		1
3/22/06	5:09:13 PM	12		2.00	4	4	2	7	468.06	9	123.5		1
3/22/06	5:11:56 PM	13		2.00	2	2	0	5	452.81	5	225.3		1
3/22/06	5:14:38 PM	14		2.00	11	11	0	8	543.89	21	59.5		1
3/22/06	5:17:22 PM	15		2.00	8	7	1	16	484.22	16	76.1		1
3/22/06	5:20:06 PM	16		2.00	8	9	0	3	495.00	16	75.5		1
3/22/06	5:23:10 PM	17		2.00	7	6	0	3	557.93	13	84.8		1
3/22/06	5:25:53 PM	18		2.00	5	5	1	4	570.90	10	106.1		1

3-24-06

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MT-06-034
3-24-06 3:53

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_063
 Batch Ended: 3/22/06 15:38
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0346 KARDAS [18] GWD ✓

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	2.28		0.30	1.78	
A4	4	0.00	2.11		0.58	1.71	
B1	5	1.58	1.91		1.22	2.06	
B2	6	1.69	1.85		0.00	1.12	
B3	7	0.00	2.18		0.00	1.33	
B4	8	0.00	1.97		0.66	1.69	
C1	9	0.00	2.08		0.00	1.78	
C2	10	0.00	1.93		0.00	1.16	
C3	11	0.00	2.12		0.00	1.27	
C4	12	1.64	2.03		3.69	2.54	
A1	13	0.00	2.21		1.68	2.26	
A2	14	0.00	2.00		0.00	1.17	
A3	15	2.01	2.28		0.12	1.78	
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	

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3-24-06

get
3-24-06

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get 3-24-06

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 0346
 22 4-10-06

SOIL ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL11171
 File ID: 25000131.s0
 Priority: Yes

Description\Location

0601168 T-61 Top
 Long Count

Collector:

Date Received: 3/27/06
 Date Collected: 3/25/06

Radionuclide	Activity (pCi/g)	MDA
Co-60 *	0	0.22
Cs-137 *	0	0.07
Pb-210 *	0.28	0.5
Ra-226	0.73	0.62
Ac-227 (D) *	0.13	0.22
Th-230 *	0	4.89
Th-232 (D)	0.8	0.37
Pu-238 *	0.3	3.82
Am-241 *	0.01	0.05

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA
Ag-108m	0	0.05
Bi-207	0	0.06
Bi-210m	0	0.05

Σ DOT 0.01 nCi/g

Instrument type: High Purity Germanium

²²⁶DOT 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

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Comments: U-238 d 0 pCi/g 14.63 MDA

Date: 3/30/06 Counted By: Analyzed By: Initials G/S

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 MI-06-0345
 0346
 4-10-06
 4-10-06

SOIL ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL11172
 File ID: 25000132.s0
 Priority: Yes

Description\Location

0601167 T-61 Bottom
 Long Count

Collector:

Date Received: 3/27/06
 Date Collected: 3/25/06

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60 *	0	0.18
Cs-137 *	0	0.09
Pb-210 *	0.01	0.57
Ra-226	0.67	0.67
Ac-227 (D) *	0	0.25
Th-230 *	1.4	4.48
Th-232 (D)	0.67	0.08
Pu-238 *	0.9	3.59
Am-241 *	0	0.06

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0	0.05
Bi-207	0.01	0.05
Bi-210m	0	0.05

Σ DOT 0.01 nCi/g

Instrument type: High Purity Germanium

² 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

COPY

Comments: U-238 d 0 pCi/g 15.21 MDA

Date: 3/30/06 Counted By: Analyzed By: Initials CB

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SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL11171
File ID: 25000137.s0
Priority: Yes

Description\Location
0601168 T-61 Top
Long Count

Collector:
Date Received: 04/06/06
Date Collected: 03/25/06

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0.02	0.03
Cs-137	*	0	0.02
Pb-210		0.16	0.16
Ra-226		0.55	0.28
Ac-227 (D)	*	0	0.09
Th-230	*	0	2.11
Th-232 (D)		0.17	0.1
Pu-238	*	0	1.59
Am-241	*	0.01	0.02

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0	0.02
Bi-207	0.01	0.01
Bi-210m	0	0.02

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

COPY

Comments: U-238d .49 pCi/g 4.24 pCi/g MDA

Date: 04/07/06 Counted By: Analyzed By: Initials CB

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) T. BLDG. 7261	SURVEY NO. MT 06 0788
PURPOSE: Upper STAIRS (CEILING ONLY) 1C1502	RWP NO. N/A
	DATE: 5-4-06
	TIME: 1650

MAP / DRAWING

SEE ATTACHED.

SCANNED 1 m² approx.
AROUND EACH LOCATION
α 1 ft NO ELEVATED
READINGS RECORDED.

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 ⊙ #/a or #p = 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>[Signature]</i>	Date: 5-4-06
Completed by: (Print Name) Michael W. 6 Hader	
Counted by: (Signature) SEE ATTACHED	HP# N/A Date: N/A
Counted by: (Print Name) Sheet's	
Reviewed/Approved by: (Signature) <i>[Signature]</i>	Date: 5-11-06
Reviewed/Approved by: (Print Name) Jerry Taylor	

F 7/12/06

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_4\20060504_1544.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0488.001 ✓
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 Units Reference Date Reference Time
A

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1-13/227

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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:2St	MESSAGES	P#
5/4/06	3:44:46 PM	-1	10.00		10	10	10	7	628.86	0	19.7	B	4
5/4/06	3:55:36 PM	0	2.00		150	139	7	0	552.71	289	12.0		4
5/4/06	3:58:19 PM	1	2.00		7	7	0	6	646.79	13	85.9		4
5/4/06	4:01:00 PM	2	2.00		13	12	0	0	638.29	24	54.3		4
5/4/06	4:03:43 PM	3	2.00		16	15	2	0	624.83	29	47.5		4
5/4/06	4:06:25 PM	4	2.00		12	12	0	0	628.43	23	56.5		4
5/4/06	4:09:07 PM	5	2.00		6	5	2	0	608.24	10	106.1		4
5/4/06	4:11:50 PM	6	2.00		12	11	6	0	628.71	22	57.6		4
5/4/06	4:14:33 PM	7	2.00		15	14	0	0	652.05	26	49.6		4
5/4/06	4:17:15 PM	8	2.00		7	6	3	0	644.17	12	91.6		4
5/4/06	4:19:57 PM	9	2.00		1	1	0	0	616.51	1	768.4		4
5/4/06	4:22:39 PM	✓10	2.00		1	1	0	0	643.13	2	447.0		4

✓

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MT-06.0488
10.5.50

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_069
 Batch Ended: 5/4/06 15:05
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

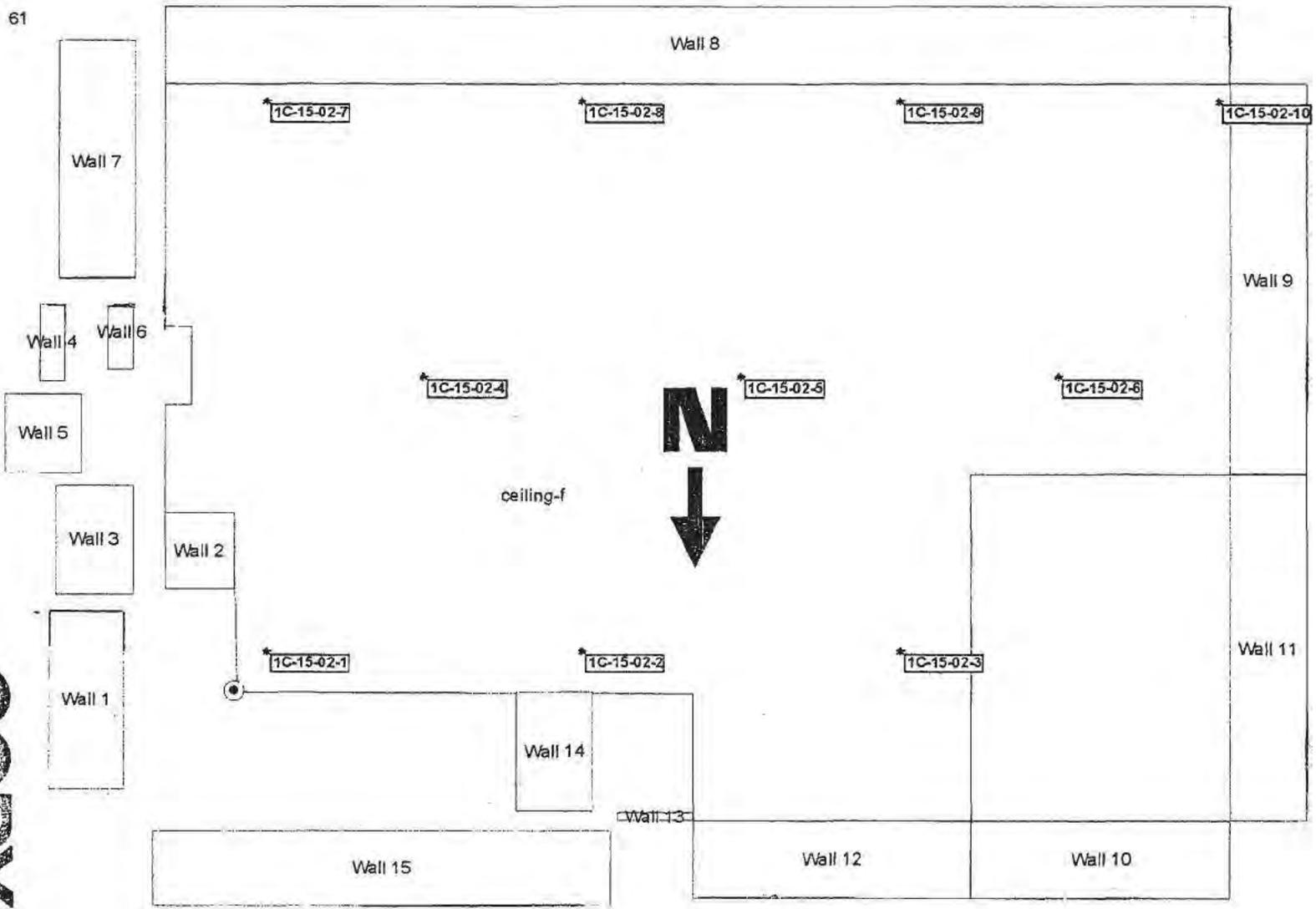
Batch ID: MT-06-0488 RICHARDSON (10) AG ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	1.96	2.18		0.00	1.32	
A2	2	0.00	2.01		0.36	1.65	
A3	3	0.00	2.30		1.55	2.18	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.87		0.00	1.20	
B2	6	0.00	1.87		0.48	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	2.08		0.00	1.78	
C2 ✓	10	0.00	1.97		2.78	2.30	

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pgs 07-8

1C-15-02 ⁵⁻¹¹⁻⁰⁶ Room 61
ceiling and upper wall static measurement locations
scan 1m² area around each ceiling location



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pg. 748
MT-06-0488

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 MT-06-0488

1C-15-02⁵⁻¹¹⁻⁰⁶ Room 61
 ceiling and upper wall static measurement locations
 scan 1m² area around each ceiling location

Area: 61				
Label	Type	Surface	LX	LY
1C-15-02-1	Systematic	ceiling-f	1	2
1C-15-02-2	Systematic	ceiling-f	14	2
1C-15-02-3	Systematic	ceiling-f	26	2
1C-15-02-4	Systematic	ceiling-f	7	12
1C-15-02-5	Systematic	ceiling-f	20	12
1C-15-02-6	Systematic	ceiling-f	32	12
1C-15-02-7	Systematic	ceiling-f	1	23
1C-15-02-8	Systematic	ceiling-f	14	23
1C-15-02-9	Systematic	ceiling-f	26	23
1C-15-02-10	Systematic	ceiling-f	38	23
1C-15-02-11	Systematic	Wall 1	7	2
1C-15-02-12	Systematic	Wall 7	0	2
1C-15-02-13	Systematic	Wall 8	3	2
1C-15-02-14	Systematic	Wall 8	15	2
1C-15-02-15	Systematic	Wall 8	28	2
1C-15-02-16	Systematic	Wall 8	40	2
1C-15-02-17	Systematic	Wall 9	11	2
1C-15-02-18	Systematic	Wall 10	8	2
1C-15-02-19	Systematic	Wall 11	10	2
1C-15-02-20	Systematic	Wall 12	9	2
1C-15-02-21	Systematic	Wall 15	6	2

Area: Area under ST.13				
Label	Type	Surface	LX	LY

COPY E78/22

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>T Bldg Room 61 1C15</u>	SURVEY NO. <u>MT-06-0570</u>
PURPOSE: <u>MARSSIM</u> <u>Trench Survey</u>	RWP NO. <u>NA</u>
	DATE: <u>6-5-06</u>
	TIME: <u>1430</u>

MAP / DRAWING

Scanned Trenches located in Room 61. Took a swipe and logged a reading at several locations. at each location also took an integrated (1 minute) count using the bicron sidler. results follow: background for sidler 232 CPM (5 min count)

- 0101T - 346 CPM
- 0102T - 394
- 0103T - 399
- 0104T - 373
- 0105T - 419
- 0106T - 336
- 0107T - 309
- 0108T - 285
- 0109T - 299
- 0110T - 289 ↓

COPY

see attached sheets for all other results

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 #α or β = direct contamination measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L2350	5923/5925	5-21-07 ✓
Bicron Sidler	5874/3966	6-13-06 ✓
	N	

Completed by: (Signature) <u>[Signature]</u>	Date: <u>6-5-06</u>
Completed by: (Print Name) <u>George Hodges/Stephen Richardson</u>	
Counted by: (Signature) <u>see</u>	HP# <u>N/A</u> Date: <u>N/A</u>
Counted by: (Print Name) <u>attached</u>	
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>6-8-06</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

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RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	βγ	Alpha	Tritium	
1	see	attached	charts	0101T
2				0102T
3				0103T
4				0104T
5				0105T
6				0106T
7				0107T
8				0108T
9				0109T
10	↓	↓	↓	0110T
N/A				

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

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).

F80/22

Protocol# 2 - MARSSIM_Smear_2.lsa

User: 580

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\20060605_1536.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0570.001 *GHV*
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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MT-06-0570

3058

2

581/227

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	DPML	A:2S%	MESSAGES	P#
6/5/06	3:37:18 PM	-1	10.00		10	9	11	5	610.19	0	20.4	B	2
6/5/06	3:48:09 PM	0	2.00		42	40	1	4	543.60	81	24.7		2
6/5/06	3:50:51 PM	1	2.00		4	4	0	4	609.98	7	142.4		2
6/5/06	3:53:34 PM	2	2.00		12	12	1	2	615.36	23	55.8		2
6/5/06	3:56:19 PM	3	2.00		12	12	0	7	513.71	25	55.8		2
6/5/06	3:59:01 PM	4	2.00		19	18	0	2	670.98	33	41.3		2
6/5/06	4:01:44 PM	5	2.00		11	10	0	0	625.25	19	62.4		2
6/5/06	4:04:28 PM	6	2.00		6	6	0	0	365.37	14	100.0		2
6/5/06	4:07:11 PM	7	2.00		13	14	0	2	619.69	24	52.7		2
6/5/06	4:09:55 PM	8	2.00		11	10	0	0	643.04	20	59.4		2
6/5/06	4:12:39 PM	9	2.00		11	11	0	2	657.05	20	59.4		2
6/5/06	4:15:22 PM	10	2.00		13	12	0	0	608.91	25	52.7		2

64

COPY

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4 of 8
MT-06-0570

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_158
 Batch Ended: 6/5/06 14:23
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: ^{GH} MT-06-0570 [10] 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	2.00		0.00	1.17	
A3	3	0.00	2.25		0.00	1.26	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.91		1.44	2.06	
B2	6	0.00	1.85		0.00	1.12	
B3	7	0.00	2.20		0.27	1.88	
B4	8	0.00	1.95		0.00	1.20	
C1	9	0.00	2.09		1.11	2.18	
C2	10	0.00	1.93		0.00	1.16	

GH

GH

COPY

5 of 8
 MT-06-0570

GH 6-7-06

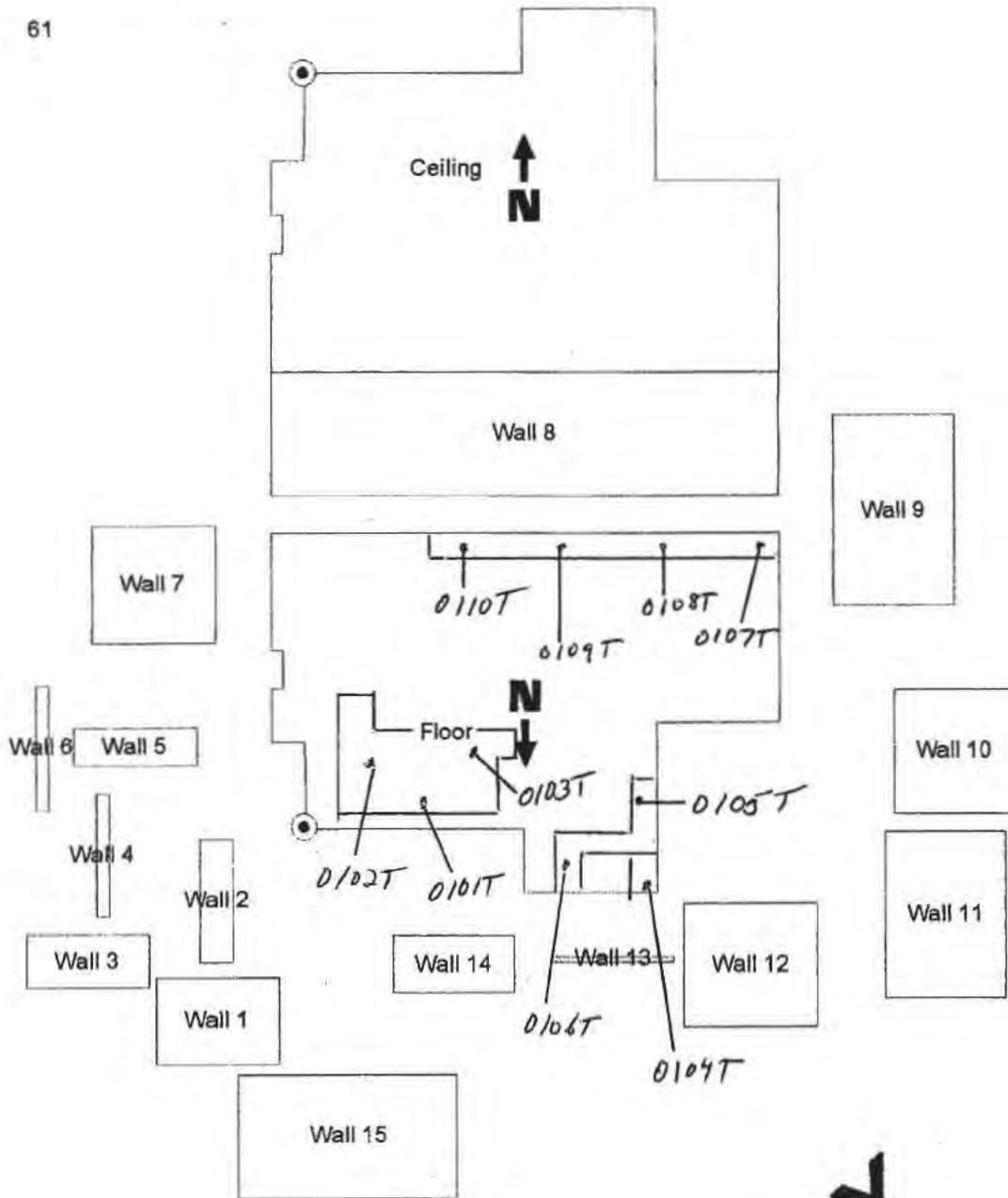
183/227

MT-06-0570

7 of 8

1C-15 Room 61 Judgmentals

61



COPY

F85/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T. Bldg 1C16 Rm 63	SURVEY NO.	MT-05-641
PURPOSE:	Drains vents & UTILITIES Post flooding	RWP NO.	N/A
		DATE:	8/11/05
		TIME:	0030

MAP / DRAWING

survey of drains, vents, and utilities resulted in no elevated readings for

LEGEND:

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

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5904/5905	2/22/06
 		
 		

Completed by: (Signature)	<i>M.D. Rowe</i>	Date:	8/11/05
Completed by: (Print Name)	M.D. Rowe		
Counted by: (Signature)	<i>See attachments</i>	HP#	N/A
Counted by: (Print Name)		Date:	N/A
Reviewed/Approved by: (Signature)	<i>Jerry Taylor</i>	Date:	9-9-05
Reviewed/Approved by: (Print Name)	Jerry Taylor		

F89/227 *SMC*

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_064
 Batch Ended: 8/11/05 9:30
 Cal. Due Date: 11/17/05
 Serial Number: 26966-3

21 9/9/05 *gr* ✓
 Batch ID: MT-05-0641 ROWE (20) 08/11/05 TAS ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.20		0.00	1.86	
A2	2	0.00	2.05		2.75	2.33	
A3	3	1.77	2.27		0.00	1.27	
A4	4	0.00	2.12		0.32	1.71	
B1	5	0.00	1.88		0.00	1.20	
B2	6	0.00	1.87		0.00	1.59	
B3	7	4.08	3.10		1.20	2.30	
B4	8	0.00	1.99		0.37	1.70	
C1	9	0.00	2.06		0.26	1.74	
C2	10	1.41	1.93		1.44	1.95	
C3	11	0.00	2.07		0.27	1.72	
C4	12	0.00	1.95		0.00	1.13	
D1	13	0.00	2.06		0.29	1.77	
D2	14	0.00	2.17		0.39	1.68	
D3	15	0.00	2.13		2.66	2.48	
D4	16	0.00	2.05		0.20	1.66	
A1	17	0.00	2.18		0.00	1.33	
A2	18	1.57	2.00		0.00	1.18	
A3	19	0.00	2.30		1.98	2.18	
A4	20	0.00	2.10		0.00	1.22	
B1	✓21	0.00	1.88		0.00	1.21	

MT-05-641

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COPY

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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_3\20050811_1245.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-0641.001 ✓
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

MT-05-641

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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#
8/11/05	12:45:43 PM	-1		10.00	10	10	9	2	617.00	0	20.1	B	3
8/11/05	12:56:31 PM	0		2.00	369	346	5	0	525.14	728	7.5		3
8/11/05	12:59:14 PM	1		2.00	2	2	0	4	475.59	3	315.4		3
8/11/05	1:01:56 PM	2		2.00	0	0	4	0	550.04	0	0.0		3
8/11/05	1:04:40 PM	3		2.00	0	0	0	0	509.71	0	0.0		3
8/11/05	1:07:22 PM	4		2.00	0	0	0	8	473.74	0	0.0		3
8/11/05	1:10:03 PM	5		2.00	0	0	2	0	445.70	0	0.0		3
8/11/05	1:12:46 PM	6		2.00	0	0	1	6	392.15	0	0.0		3
8/11/05	1:15:28 PM	7		2.00	28	25	6	0	502.77	56	32.0		3
8/11/05	1:18:10 PM	8		2.00	0	0	0	0	482.69	0	0.0		3
8/11/05	1:20:52 PM	9		2.00	0	0	1	7	584.33	0	0.0		3
8/11/05	1:23:34 PM	10		2.00	3	2	1	7	430.19	7	162.4		3
8/11/05	1:26:16 PM	11		2.00	4	3	3	7	612.42	7	152.6		3
8/11/05	1:28:58 PM	12		2.00	0	0	0	0	598.26	1	1066.9		3
8/11/05	1:31:40 PM	13		2.00	21	18	0	2	560.58	40	38.5		3
8/11/05	1:34:21 PM	14		2.00	47	44	0	1	581.35	88	23.2		3
8/11/05	1:37:21 PM	15		2.00	18	16	3	0	481.51	37	42.7		3
8/11/05	1:40:03 PM	16		2.00	61	57	0	1	388.47	141	19.9		3
8/11/05	1:43:06 PM	17		2.00	0	0	0	6	566.57	0	0.0		3
8/11/05	1:45:47 PM	18		2.00	9	8	3	0	480.75	18	74.0		3
8/11/05	1:48:28 PM	19		2.00	3	1	0	0	575.77	5	207.4		3
8/11/05	1:51:09 PM	20		2.00	4	3	0	4	572.59	7	152.6		3
8/11/05	1:53:51 PM	✓21		2.00	7	7	6	0	593.87	13	88.8		3

✓

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Fa1/227

PP1TR0SC0,600,0,600IP0,10837,1016,9821

MT-05-641

Pisc 5 of 8

T-Building Vents, Drains, and Utilities Survey 1C16 RM 63

RSDS# mt-05-641

RCT:

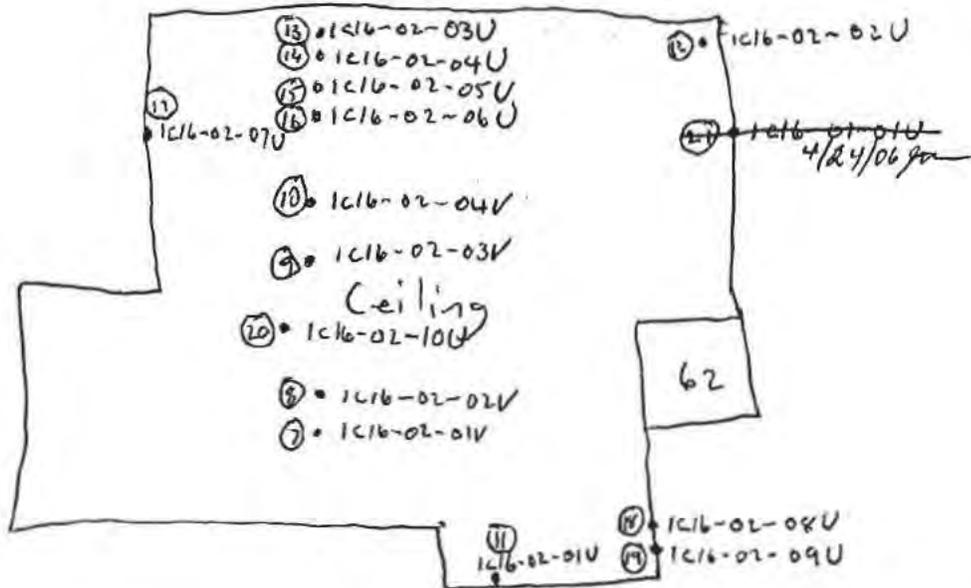
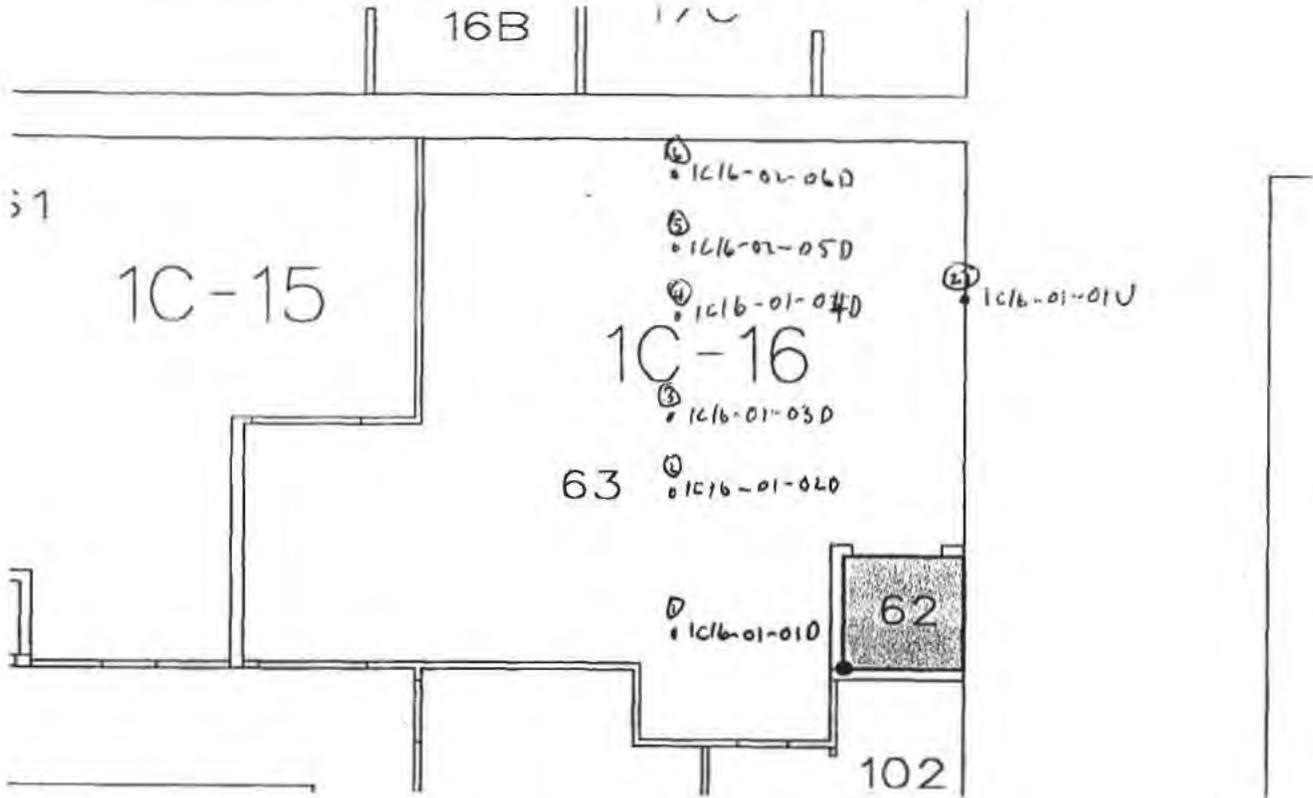
RCT: N/A

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:	0.175 ✓	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:	0.142	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	1C160101D	5904		5905	1	1	8/10/05	21:22	10	120	38
ALPHA	1C160102D	5904		5905	1	2	8/10/05	21:27	14	120	53
ALPHA	1C160103D	5904		5905	1	3	8/10/05	21:31	9	120	34
ALPHA	1C160104D	5904		5905	1	4	8/10/05	21:35	13	120	49
ALPHA	1C160105D	5904		5905	1	5	8/10/05	21:39	13	120	49
ALPHA	1C160106D	5904		5905	1	6	8/10/05	21:43	14	120	53
ALPHA	1C160201V	5904		5905	1	7	8/10/05	21:48	13	120	49
ALPHA	1C160202V	5904		5905	1	8	8/10/05	21:54	15	120	57
ALPHA	1C160203V	5904		5905	1	9	8/10/05	21:59	7	120	26
ALPHA	1C160204V	5904		5905	1	10	8/10/05	22:04	7	120	26
ALPHA	1C160201U	5904		5905	1	11	8/10/05	22:09	11	120	42
ALPHA	1C160202U	5904		5905	1	12	8/10/05	22:14	10	120	38
ALPHA	1C160203U	5904		5905	1	13	8/10/05	22:21	13	120	49
ALPHA	1C160204U	5904		5905	1	14	8/10/05	22:27	11	120	42
ALPHA	1C160205U	5904		5905	1	15	8/10/05	22:33	11	120	42
ALPHA	1C160206U	5904		5905	1	16	8/10/05	22:37	9	120	34
ALPHA	1C160207U	5904		5905	1	17	8/10/05	22:41	11	120	42
ALPHA	1C160208U	5904		5905	1	18	8/10/05	22:46	16	120	60
ALPHA	1C160209U	5904		5905	1	19	8/10/05	22:49	14	120	53
ALPHA	1C160210U	5904		5905	1	20	8/10/05	23:05	9	120	34
ALPHA	1C160101U	5904		5905	1	21	8/10/05	23:10	24	120	91
BETA	1C160101D	5904		5905	2	22	8/10/05	21:24	106	60	961
BETA	1C160102D	5904		5905	2	23	8/10/05	21:28	122	60	1107
BETA	1C160103D	5904		5905	2	24	8/10/05	21:32	117	60	1061
BETA	1C160104D	5904		5905	2	25	8/10/05	21:36	116	60	1052
BETA	1C160105D	5904		5905	2	26	8/10/05	21:40	105	60	952
BETA	1C160106D	5904		5905	2	27	8/10/05	21:44	55	60	499
BETA	1C160201V	5904		5905	2	28	8/10/05	21:49	88	60	798
BETA	1C160202V	5904		5905	2	29	8/10/05	21:55	95	60	862
BETA	1C160203V	5904		5905	2	30	8/10/05	22:00	82	60	744
BETA	1C160204V	5904		5905	2	31	8/10/05	22:05	78	60	707
BETA	1C160201U	5904		5905	2	32	8/10/05	22:10	95	60	862
BETA	1C160202U	5904		5905	2	33	8/10/05	22:15	95	60	862
BETA	1C160203U	5904		5905	2	34	8/10/05	22:23	77	60	698
BETA	1C160204U	5904		5905	2	35	8/10/05	22:28	71	60	644
BETA	1C160205U	5904		5905	2	36	8/10/05	22:34	69	60	626
BETA	1C160206U	5904		5905	2	37	8/10/05	22:38	70	60	635
BETA	1C160207U	5904		5905	2	38	8/10/05	22:42	78	60	707
BETA	1C160208U	5904		5905	2	39	8/10/05	22:47	147	60	1333
BETA	1C160209U	5904		5905	2	40	8/10/05	22:50	148	60	1342
BETA	1C160210U	5904		5905	2	41	8/10/05	23:06	59	60	535
BETA	1C160101U	5904		5905	2	42	8/10/05	23:11	56	60	508

COPY

F92/225 ✓

2350-1 5904/5905
cui due 2/12/06



COPY

F93/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T-63	1C16	SURVEY NO. MT-05-1074
PURPOSE: SHONKA SCAN SURVEY		RWP NO. N/A
FOLLOW UP TO SHONKA ELEVATED AREA RESRAD		DATE: 10-24-05
		TIME: 1200

MAP / DRAWING

SHONKA SCAN 100% ACCESSIBLE SURFACES
 Potential ELEVATED READINGS DETECTED DURING SCAN
 LOCATION 1C160101E HAS 2772 DPM/100cm² & FIXED

FOR SMEAR AND STATIC COUNT RESULTS SEE ATTACHED

REF. RSDS MT-05-1105 Post ACID ETCH SURVEY
 SCM 23 SCAN & 1B' THIS SPOT.

100% FLOOR / WALL UP TO 2 METERS (ACCESSIBLE SURFACES)
 25% WALL ABOVE 2 METERS

COPY

LEGEND:

= mrem/hr (γ) whole body

#E = mrem/hr (β+γ+γ) extremity on contact

K = factor of 1000

--- radiological boundary

INSTRUMENT	SERIAL #	CAL DUE DATE
SCM 23	R-160	6-1-06
SCM 23	C-160	6-1-06



= 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
2350-1	5923/5925	5-17-06
N/A		

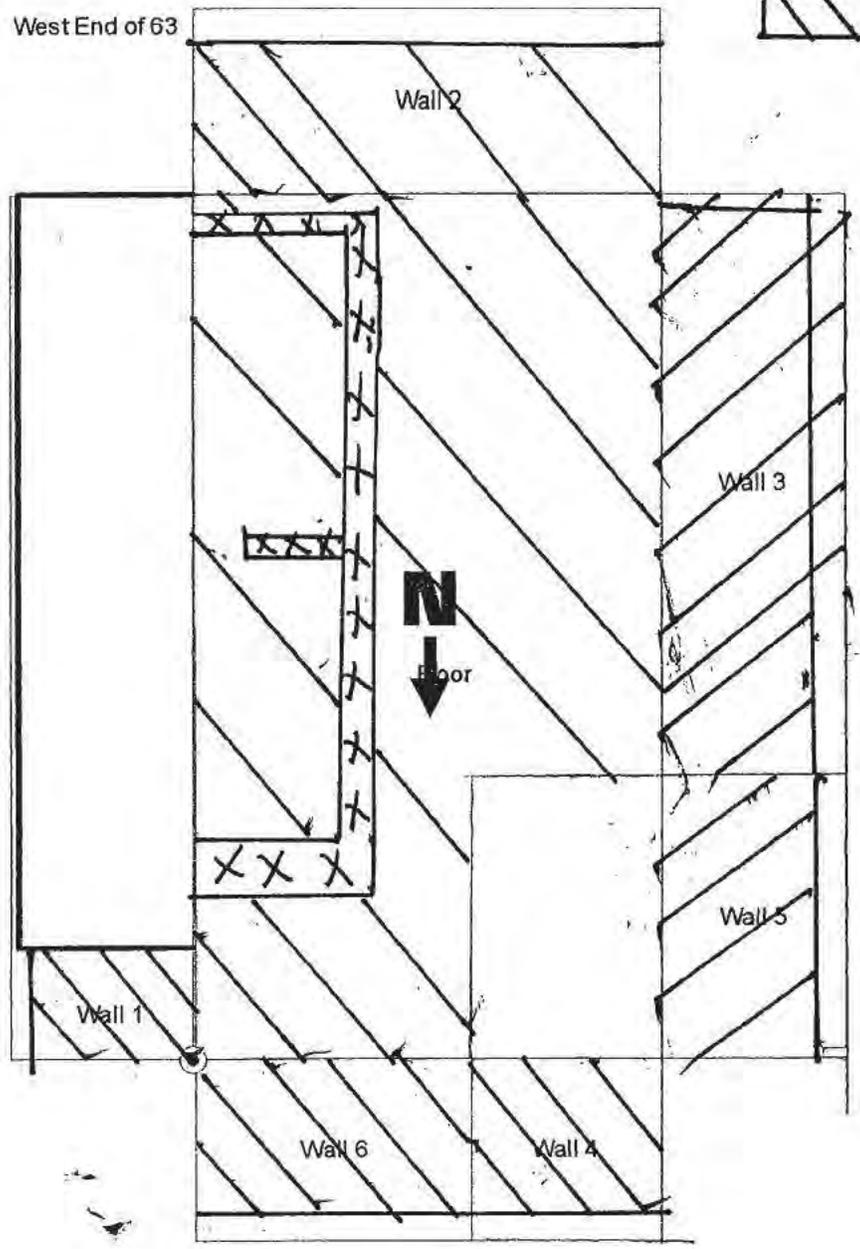
Completed by: (Signature) <i>Neal Reynolds</i>	Date: 10-25-05
Completed by: (Print Name) NEAL REYNOLDS	
Counted by: (Signature) <i>SEE</i>	HP# N/A Date: N/A
Counted by: (Print Name) ATTACHED	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	HP# N/A Date: 10-27-05
Reviewed/Approved by: (Print Name) Jerry Taylor	

995/1227
JMC

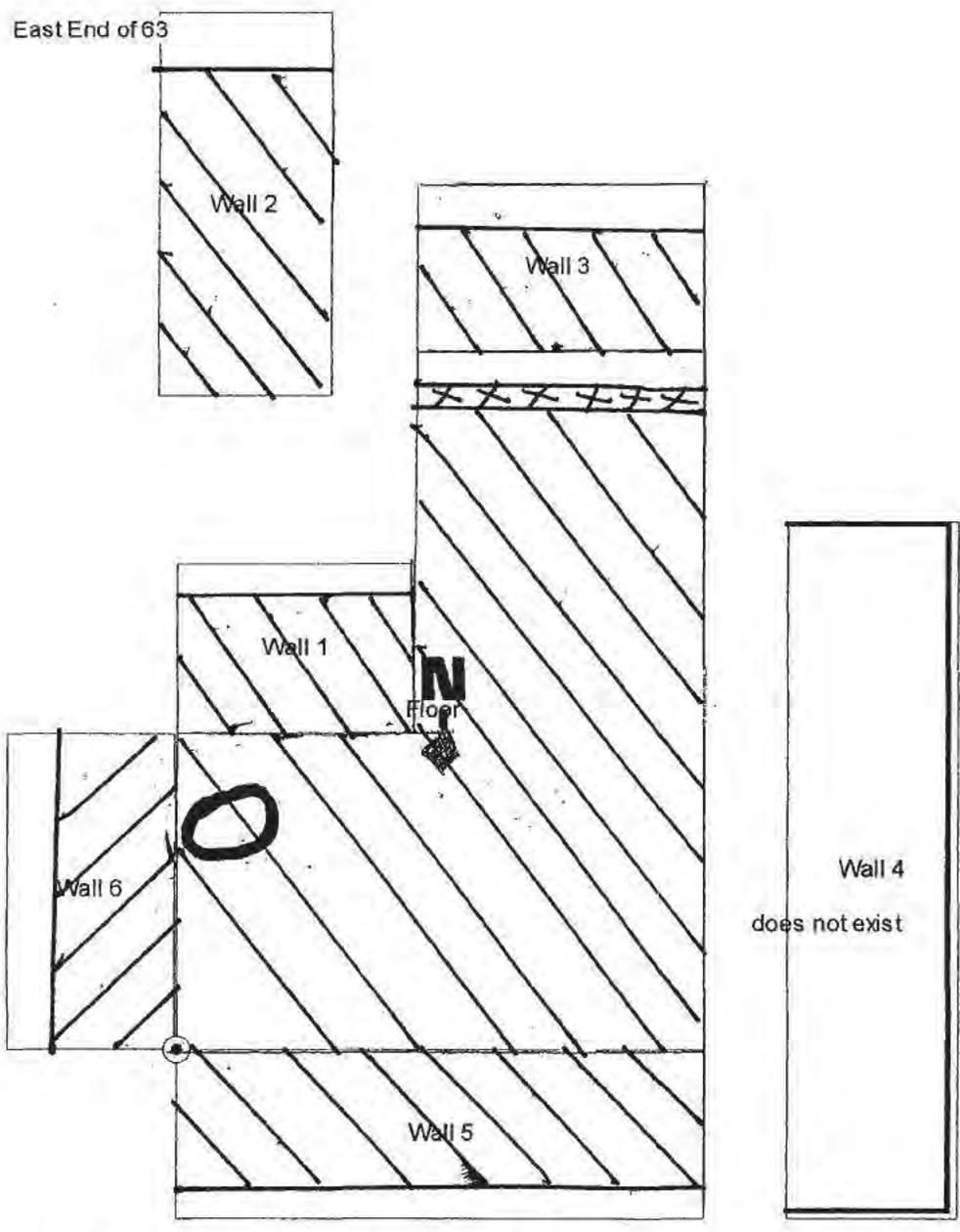
SCM SCAN IN ROLLINS
AND CORNER MODE
100% WHERE ACCESSIBLE
10-21-05 ✓

XXXX = TRENCH

//// = SCM SURVEY



COPY



SCM SURVEY = [diagonal hatching]

TRENCH = [XXXX]

N
 ↓

COPY

SCM SCAN IN ROLLINS
 AND CORNER MODE
 100% WHERE ACCESSIBLE
 10-21-05 ✓

L22/86F

Protocol# 4 - MARSSIM_Smear_4.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_4\20051025_1232.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1074_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	Units	Reference Date	Reference Time
A				

COPY 10/27/05

MT-05-1074
Pg 5 of 9
RST

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#
10/25/05	12:33:14 PM	-1		10.00	9	8	12	9	616.28	0	20.7	B	4
10/25/05	12:44:05 PM	0		2.00	332	317	2	1	542.73	645	7.9		4
10/25/05	12:46:48 PM	1		2.00	4	4	0	23	353.28	9	148.4		4

✓
na

COPY

10/25/05

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MT-05-1074

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_141
Batch Ended: 10/25/05 10:34
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1074 [1] REYNOLDS 10-25-05 RLH ✓

Detector ID	Sample ID
C1	1

Alpha Activity		
DPM	σ	flags
0.00	2.06	

Vnr

Beta Activity		
DPM	σ	flags
0.26	1.74	

Vnr

COPY

F 10/27/2007

MT-05-1074
pg 7 of 9
RLH

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T BLDG Rm 63	SURVEY NO.	MT-05-1092
PURPOSE:	Lower STATICS	RWP NO.	N/A
		DATE:	10/26/05
		TIME:	1335

IC16

MAP/DRAWING

COPY

See attached maps

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

= mrem/hr neutron
 = air sample number

= swipe number
 or β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5855/5921	6/9/06
 	 	
 	 	
 	 	

ML-0620 (2-08)

Completed by: (Signature)	<i>Wayne Jones</i>	DATE:	10/26/05
Completed by: (Print Name)	WAYNE JONES		
Counted by: (Signature)	<i>See attached</i>	HP #	DATE:
Counted by: (Print Name)	"		
Reviewed/Approved by: (Signature)	<i>Jess Griffin</i>	DATE:	10/28/05
Reviewed/Approved by: (Print Name)	JESS GRIFIN		

F104/227

RMS

WT 10/27/05

Survey No. MT-05-1092

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination			
Swipes (dpm/100cm ²)			
Sample #	Beta	Alpha	Tritium
1			IC1601015
2			IC1601025
3			IC1601035
4			IC1601045
5			IC1601055
6			IC1601065
7			IC1601075
8			IC1601085
9			IC1601095
10			IC1601105
11			IC1601115
12			IC1601125
13			IC1601135
14			IC1601145
15			IC1601155
16			IC1601165
17			IC1601175
18			IC1601185
19			IC1601195
20			IC1601205
21			
22			
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31			
32			
33			
34			
35			

Removable Contamination			
Swipes (dpm/100cm ²)			
Sample #	Beta	Alpha	Tritium
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
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66			
67			
68			
69			
70			

COPY

COMMENTS:

- 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.

F105/227

Smear Analysis

COPY

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_154
 Batch Ended: 10/26/05 17:09
 Cal. Due Date: 11/17/05
 Serial Number: 26966-3

Batch ID: MT-05-1092 WJONES (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	flags
0.00	2.20	
0.00	2.00	
1.77	2.28	
0.00	2.12	
0.00	1.92	
0.00	1.85	
0.00	2.20	
0.00	2.03	
0.00	2.05	
0.00	1.92	
0.00	2.07	
7.49	3.91	
0.00	2.06	
0.00	2.15	
0.00	2.11	
0.00	2.05	
0.00	2.20	
0.00	2.00	
1.77	2.30	
0.00	2.12	

Beta Activity		
DPM	σ	flags
0.00	1.86	
0.00	1.18	
0.54	1.78	
0.32	1.71	
1.73	2.07	
0.00	1.13	
0.31	1.88	
2.55	2.40	
0.00	1.23	
0.47	1.59	
0.27	1.72	
1.16	1.95	
0.29	1.77	
0.00	1.19	
1.42	2.15	
0.20	1.66	
0.00	1.86	
0.00	1.18	
1.80	2.18	
0.32	1.71	

WJ

WJ

MT-05-1092

Pg 3 of 9

F106/227

Protocol# 1 - MARSSIM_Smear_1.lsa

MARSSIM Smear Data

User: 5801
10/26/05

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\20051026_1847.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1092.001
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

604 Ed
2601-50-LW

F107/227

RLW

Protocol# 1 - MARSSIM_Smear_1.lsa

MARSSIM Smear Data

6458d
MT-05-1092

COPY

B
C

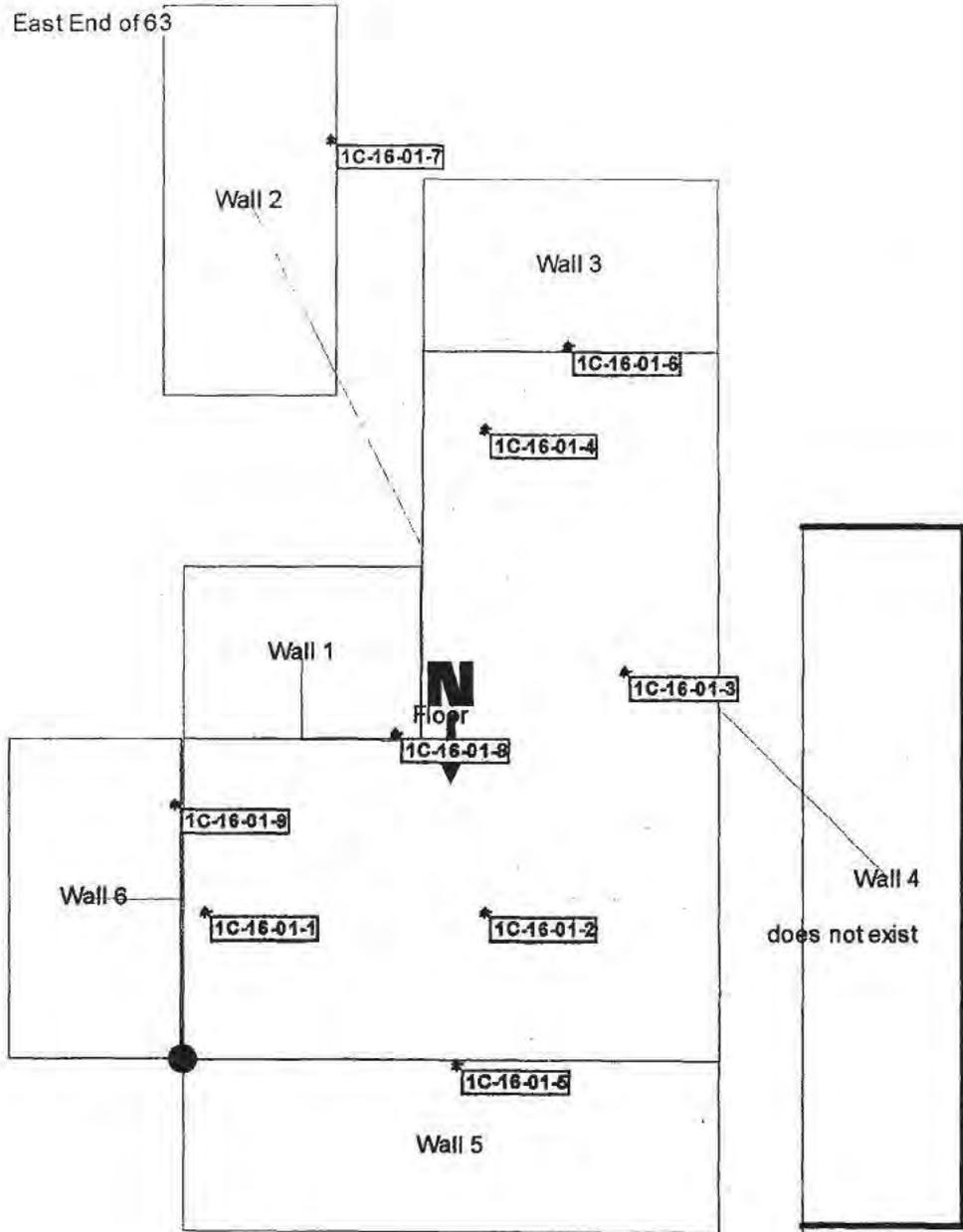
Instrument Block Data
Machine=Tri-Carb 2900TR
Version=2.06
423022
MODEL=Tri-Carb 2900TR
VERSION=2.06
SERIAL=423022

Cycle 1 Results

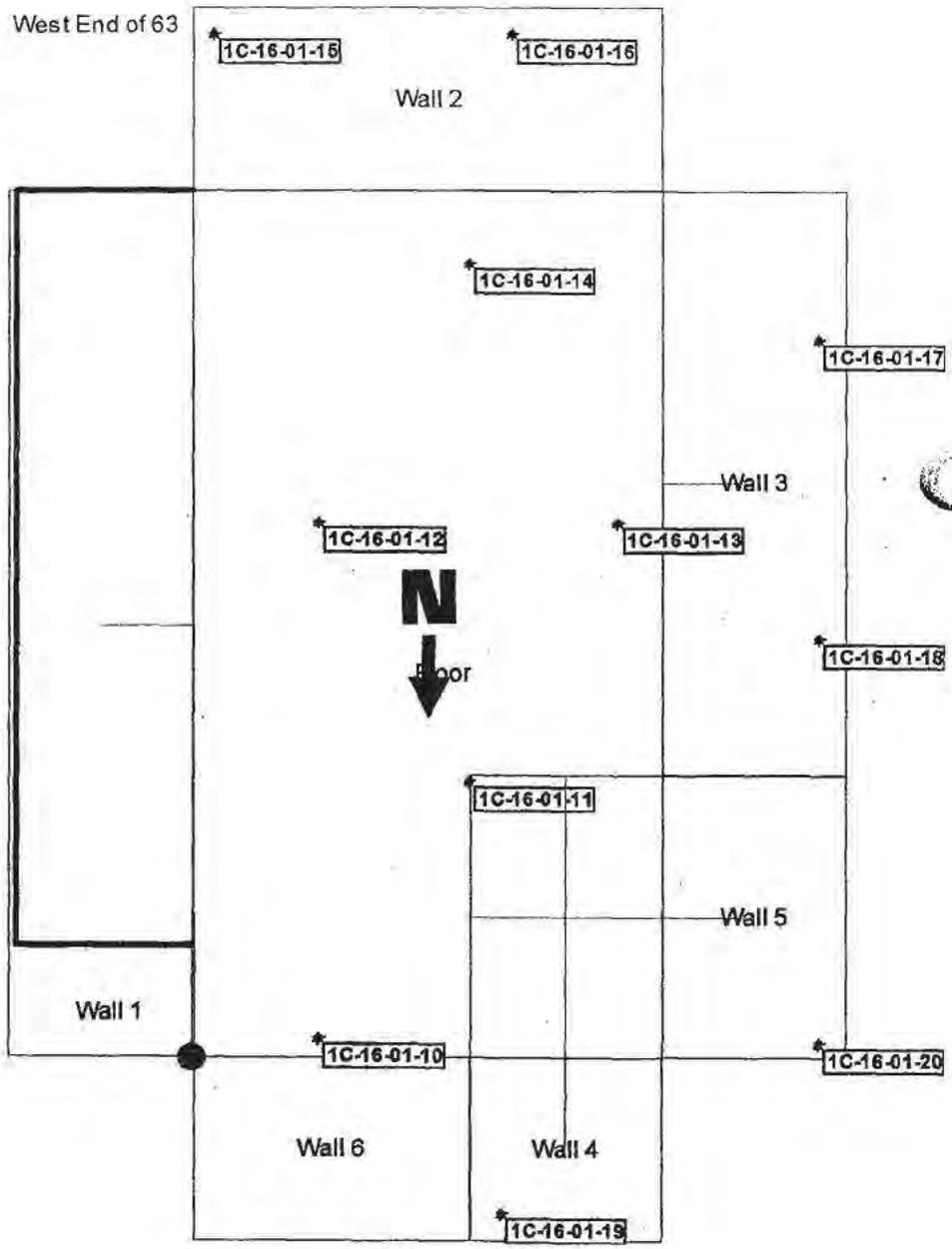
DATE	TIME	S#	Count	Time	CPMA	CPMB	CPMC	LUM	tSIE	DPMI	A:2S%	MESSAGES	P#
10/26/05	6:47:44 PM	-1		10.00	8	8	11	2	622.45	0	22.1	B	1
10/26/05	6:58:27 PM	0		2.00	508	483	0	0	554.79	976	6.3		1
10/26/05	7:01:09 PM	1		2.00	4	2	0	29	482.52	8	136.7		1
10/26/05	7:03:51 PM	2		2.00	0	0	0	27	431.95	0	0.0		1
10/26/05	7:06:34 PM	3		2.00	2	2	1	19	412.19	5	212.3		1
10/26/05	7:09:16 PM	4		2.00	1	1	0	16	453.58	3	357.5		1
10/26/05	7:11:58 PM	5		2.00	8	6	2	22	581.62	15	75.9		1
10/26/05	7:14:39 PM	6		2.00	6	5	0	3	606.09	12	90.4		1
10/26/05	7:17:20 PM	7		2.00	6	5	0	4	604.49	10	98.2		1
10/26/05	7:20:02 PM	8		2.00	5	4	0	7	533.92	10	103.7		1
10/26/05	7:22:43 PM	9		2.00	14	12	1	5	548.62	27	49.7		1
10/26/05	7:25:25 PM	10		2.00	2	2	0	9	466.19	4	229.9		1
10/26/05	7:28:07 PM	11		2.00	0	0	0	24	376.16	0	0.0		1
10/26/05	7:30:50 PM	12		2.00	7	6	0	6	507.18	14	81.8		1
10/26/05	7:33:32 PM	13		2.00	3	2	0	9	478.01	5	190.2		1
10/26/05	7:36:16 PM	14		2.00	0	0	0	19	367.21	0	0.0		1
10/26/05	7:38:57 PM	15		2.00	8	6	0	3	590.69	15	75.9		1
10/26/05	7:41:39 PM	16		2.00	7	7	0	3	550.48	14	79.8		1
10/26/05	7:44:25 PM	17		2.00	2	2	0	5	590.74	4	212.3		1
10/26/05	7:47:07 PM	18		2.00	0	0	0	6	589.03	1	936.5		1
10/26/05	7:49:49 PM	19		2.00	6	5	0	4	604.99	11	96.1		1
10/26/05	7:52:30 PM	20		2.00	8	7	0	3	573.81	15	75.9		1

wjg

F108/229



COPY



COPY

1C-16-01

floor and lower wall static measurement locations

Area: 62				
Label	Type	Surface	LX	LY

Area: East End of 63				
Label	Type	Surface	LX	LY
1C-16-01-1	Systematic	Floor	1	6
1C-16-01-2	Systematic	Floor	12	6
1C-16-01-3	Systematic	Floor	18	16
1C-16-01-4	Systematic	Floor	12	26
1C-16-01-5	Systematic	Wall 5	11	0
1C-16-01-6	Systematic	Wall 3	6	0
1C-16-01-7	Systematic	Wall 2	10	0
1C-16-01-8	Systematic	Wall 1	9	0
1C-16-01-9	Systematic	Wall 6	10	0

COPY

Area: West End of 63				
Label	Type	Surface	LX	LY
1C-16-01-10	Systematic	Floor	5	1
1C-16-01-11	Systematic	Floor	11	11
1C-16-01-12	Systematic	Floor	5	20
1C-16-01-13	Systematic	Floor	16	20
1C-16-01-14	Systematic	Floor	11	30
1C-16-01-15	Systematic	Wall 2	1	6
1C-16-01-16	Systematic	Wall 2	12	6
1C-16-01-17	Systematic	Wall 3	6	6
1C-16-01-18	Systematic	Wall 3	17	6
1C-16-01-19	Systematic	Wall 4	6	6
1C-16-01-20	Systematic	Wall 5	10	6

T-Building Lower Static Survey Rm 63 1C16 COPY

RSDS# MT-05-1092

RCT: ██████

RCT: ██████

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
Alpha	43-68 BKG:	0	EFF:	0.211	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.105	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
ALPHA	1C160101S	5855		5921	1	1	10/26/05	11:50	17	120	64
ALPHA	1C160102S	5855		5921	1	2	10/26/05	11:54	21	120	79
ALPHA	1C160103S	5855		5921	1	3	10/26/05	11:58	9	120	34
ALPHA	1C160104S	5855		5921	1	4	10/26/05	12:02	7	120	26
ALPHA	1C160105S	5855		5921	1	5	10/26/05	12:06	5	120	19
ALPHA	1C160106S	5855		5921	1	6	10/26/05	12:10	3	120	11
ALPHA	1C160107S	5855		5921	1	7	10/26/05	12:14	2	120	8
ALPHA	1C160108S	5855		5921	1	8	10/26/05	12:17	2	120	8
ALPHA	1C160109S	5855		5921	1	9	10/26/05	12:21	7	120	26
ALPHA	1C160110S	5855		5921	1	10	10/26/05	12:26	21	120	79
ALPHA	1C160111S	5855		5921	1	11	10/26/05	12:36	18	120	68
ALPHA	1C160112S	5855		5921	1	12	10/26/05	12:40	20	120	75
ALPHA	1C160113S	5855		5921	1	13	10/26/05	12:44	22	120	83
ALPHA	1C160114S	5855		5921	1	14	10/26/05	12:47	14	120	53
ALPHA	1C160115S	5855		5921	1	15	10/26/05	12:51	1	120	4
ALPHA	1C160116S	5855		5921	1	16	10/26/05	12:55	4	120	15
ALPHA	1C160117S	5855		5921	1	17	10/26/05	12:59	0	120	0
ALPHA	1C160118S	5855		5921	1	18	10/26/05	13:03	1	120	4
ALPHA	1C160119S	5855		5921	1	19	10/26/05	13:06	1	120	4
ALPHA	1C160120S	5855		5921	1	20	10/26/05	13:10	3	120	11
BETA	1C160101S	5855		5921	2	21	10/26/05	11:51	212	60	2039
BETA	1C160102S	5855		5921	2	22	10/26/05	11:55	188	60	1809
BETA	1C160103S	5855		5921	2	23	10/26/05	11:59	180	60	1732
BETA	1C160104S	5855		5921	2	24	10/26/05	12:03	182	60	1751
BETA	1C160105S	5855		5921	2	25	10/26/05	12:07	127	60	1222
BETA	1C160106S	5855		5921	2	26	10/26/05	12:11	115	60	1106
BETA	1C160107S	5855		5921	2	27	10/26/05	12:15	112	60	1077
BETA	1C160108S	5855		5921	2	28	10/26/05	12:19	145	60	1395
BETA	1C160109S	5855		5921	2	29	10/26/05	12:22	109	60	1049
BETA	1C160110S	5855		5921	2	30	10/26/05	12:27	159	60	1530
BETA	1C160111S	5855		5921	2	31	10/26/05	12:37	182	60	1751
BETA	1C160112S	5855		5921	2	32	10/26/05	12:41	130	60	1251
BETA	1C160113S	5855		5921	2	33	10/26/05	12:45	152	60	1462
BETA	1C160114S	5855		5921	2	34	10/26/05	12:49	156	60	1501
BETA	1C160115S	5855		5921	2	35	10/26/05	12:52	135	60	1299
BETA	1C160116S	5855		5921	2	36	10/26/05	12:56	108	60	1039
BETA	1C160117S	5855		5921	2	37	10/26/05	13:00	100	60	962
BETA	1C160118S	5855		5921	2	38	10/26/05	13:04	108	60	1039
BETA	1C160119S	5855		5921	2	39	10/26/05	13:07	135	60	1299
BETA	1C160120S	5855		5921	2	40	10/26/05	13:11	106	60	1020

N/A

N/A

F112/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) <u>T-63</u> <u>1C16</u>	SURVEY NO. <u>MT-05-1105</u>
PURPOSE: <u>POST ACID ETCH SURVEY</u>	RWP NO. <u>N/A</u>
	DATE: <u>10-28-05</u>
	TIME: <u>13</u>

MAP / DRAWING

COPY

PRIOR TO ACID ETCH, LOCATION 1C160101E
HAD 2772 DPM/100cm² α. REFERENCE MT-05-1074

DIRECT READING AFTER ACID ETCH FOR 1C160101EAE
IS 48 DPM/100cm² α.

FOR SMEAR AND STATIC COUNT RESULTS SEE ATTACHED

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 dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5924/5929	3-9-06
 	 	
 	 	

Completed by: (Signature) <u>[Signature]</u>	Date: <u>10-31-05</u>
Completed by: (Print Name) <u>NEAL REYNOLDS</u>	
Counted by: (Signature) <u>SEE</u>	HP# <u>N/A</u> Date: <u> </u>
Counted by: (Print Name) <u>SEE ATTACHED</u>	
Reviewed/Approved by: (Signature) <u>[Signature]</u>	Date: <u>11-9-05</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

F113/
1227
RMC

Survey No.

MT-05-1105

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	DD	Alpha	Tritium	Comments
1	SEE	ATTACHED		ICILCIGIEAE
N/A				

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

COPY

COMMENTS:

NOTES:

1. See MD-30036 10002 for calculations of WB, extremity and skin dose rates.
2. To request KO Count Room analysis for DD, alpha, or tritium, leave column blank. Mark column N/A if not needed. If count room 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.

FILE/227

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\20051031_0936.results

Comma-Delimited File Name: D:\MARSSIM LSC\MT-05-1105.001

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				

F-115/007

COPY

PAGE 3 OF 7
MT-05-1105
RHH

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#
10/31/05	9:37:12 AM	-1		10.00	9	8	12	8	608.66	0	21.4	B	2
10/31/05	9:48:00 AM	0		2.00	568	536	2	0	577.94	1072	6.0		2
10/31/05	9:50:43 AM	✓1		2.00	1	1	0	20	364.51	3	407.5		2

vine

COPY

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MT-05-1105

F116/227

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_163
Batch Ended: 10/31/05 8:55
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1105 [1] REYNOLDS 10-31-05 RLH ✓

Detector ID	Sample ID
B1	1

Alpha Activity		
DPM	σ	flags
0.00	1.92	

✓ NR

Beta Activity		
DPM	σ	flags
1.73	2.07	

✓ NR

ELM/227

NR 10-31-05
Page 1 of 1

COPY

PAGE 5 of 7
MT-05-1105

RLH

T-Bldg. Rm.63. Post acid etch survey

RSDS# MT-05-1105

RCT: ████

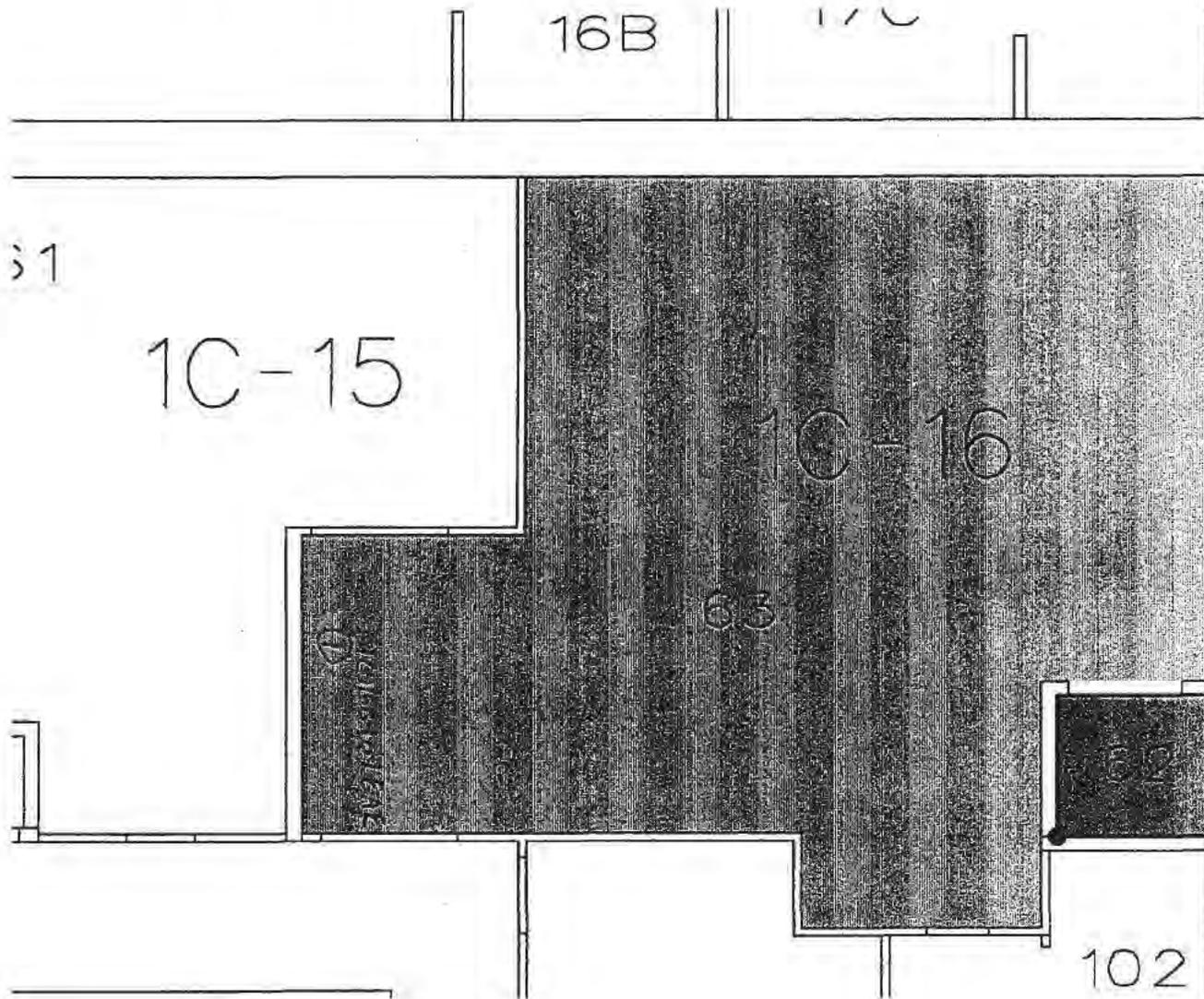
RCT: N/A

Alpha	43-68 BKG:	0	EFF:	0.3 ✓	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector # :	1
Beta	43-68 BKG:	0	EFF:	0.21 ✓	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/100cm ²
ALPHA	1C160101EAE	5924	████	5929	1	1	10/28/05	13:22	18	120	48 ✓
BETA	1C160101EAE	5924	████	5929	2	1	10/28/05	13:23	209	60	1580 ✓
	AE=Acid Etch										

COPY

F118/227

1C-16 Rooms 62 and 63
Class 1



COPY

PAGE 7 of 7
MT-05-1105

F119/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T BLDG Rm 63462	SURVEY NO.	MT-05-1106
PURPOSE:	Upper and lower ^{WS 11/1/05} station Judgements	RWP NO.	N/A
	1C16	DATE:	10/28/05
		TIME:	1300

MAP/DRAWING

COPY

See attached map

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



= mrem/hr neutron



= swipe number



= air sample number



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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5855/5921	6/9/06
 	 	
 	 	
 	 	

ML-9620 (2-88)

Completed by: (Signature)	Wayne Jones	DATE:	10/28/05
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:	1-17-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

File 227-BM

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination			
Swipes (dpm/100cm ²)			
Sample #	Beta	Alpha	Tritium
1	See	g & checked	IC1601015
2			IC1601025
3			IC1601035
4			IC1601045
5			IC1601055
6			IC1601065
7			IC1601075
8			IC1601085
9			IC1601095
10			IC1601105
11			IC1602015
12			IC1602025
13			IC1602035
14			IC1602045
15			IC1602055
16			IC1602065
17			IC1602075
18			IC1602085
19			IC1602095
20			IC1602105
21			
22			
23			
24			
25			
26	N		
27		A	
28			
29			
30			
31			
32			
33			
34			
35			

Removable Contamination			
Swipes (dpm/100cm ²)			
Sample #	Beta	Alpha	Tritium
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49	N		
50		A	
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			
69			
70			

COPY

COMMENTS: N
A

NOTES:

- See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
- 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.
- Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

F121/227

MT-05-1106 pg 3810

Smear Analysis

COPY

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_000
Batch Ended: 11/1/05 15:16
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1106 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	flags
0.00	2.18	
0.00	2.02	
0.00	2.27	
0.00	2.10	
0.00	1.92	
0.00	1.87	
0.00	2.18	
0.00	1.97	
0.00	2.05	
0.00	1.91	
0.00	2.06	
1.68	1.96	
0.00	2.05	
0.00	2.19	
0.00	2.11	
3.57	2.88	
0.00	2.22	
0.00	2.00	
0.00	2.28	
0.00	2.10	

Beta Activity		
DPM	σ	flags
0.00	1.33	
0.42	1.65	
0.00	1.27	
0.00	1.22	
1.73	2.07	
0.00	1.59	
0.00	1.34	
0.00	1.21	
0.00	1.23	
0.00	1.12	
0.00	1.22	
0.47	1.59	
0.00	1.25	
2.77	2.38	
1.42	2.15	
0.00	1.17	
0.99	2.27	
0.00	1.18	
0.72	1.78	
0.00	1.22	

wg

wg

F1227/227

AK

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801 11/2/05

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\20051101_1621.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1106.001 ✓
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

#Vials/Sample: 1

Repeat Sample Count: 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

Colored Samples: Off

Coincidence Time (nsec): 18

Luminescence Correction: Off

Heterogeneity Monitor: Off

Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				

pg 4 of 10

MT-05-1106

F-105/327

Protocol# 1 - MARSSIM_Smear_1.1sa

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#
11/1/05	4:21:50 PM	-1	10	10.00	10	10	12	2	625.28	0	19.8	B	1
11/1/05	4:32:36 PM	0	2	2.00	497	470	0	0	545.88	962	6.4		1
11/1/05	4:35:18 PM	1	2	2.00	8	7	0	30	575.83	16	77.2		1
11/1/05	4:38:00 PM	2	2	2.00	1	1	0	17	600.47	2	386.8		1
11/1/05	4:40:43 PM	3	2	2.00	6	5	3	36	335.28	16	100.1		1
11/1/05	4:43:25 PM	4	2	2.00	4	3	0	4	593.32	7	147.3		1
11/1/05	4:46:07 PM	5	2	2.00	2	2	1	4	609.16	4	229.9		1
11/1/05	4:48:48 PM	6	2	2.00	0	0	0	5	567.32	0	0.0		1
11/1/05	4:51:29 PM	7	2	2.00	0	0	0	10	594.97	0	0.0		1
11/1/05	4:54:12 PM	8	2	2.00	0	0	0	7	574.72	0	0.0		1
11/1/05	4:56:54 PM	9	2	2.00	0	0	0	18	369.49	0	0.0		1
11/1/05	4:59:35 PM	10	2	2.00	0	0	0	11	532.79	0	0.0		1
11/1/05	5:02:16 PM	11	2	2.00	36	33	0	3	563.12	69	27.1		1
11/1/05	5:04:57 PM	12	2	2.00	293	132	0	93	568.48	556	8.4		1
11/1/05	5:07:43 PM	13	2	2.00	3	2	0	8	566.51	5	206.8		1
11/1/05	5:10:25 PM	14	2	2.00	39	36	0	2	599.13	73	25.8		1
11/1/05	5:13:06 PM	15	2	2.00	6	4	0	12	573.27	12	97.2		1
11/1/05	5:15:47 PM	16	2	2.00	12	11	0	2	543.54	23	58.5		1
11/1/05	5:18:34 PM	17	2	2.00	4	3	0	0	626.99	7	147.3		1
11/1/05	5:21:16 PM	18	2	2.00	3	2	0	4	505.40	6	180.0		1
11/1/05	5:23:57 PM	19	2	2.00	0	0	0	6	622.10	0	0.0		1
11/1/05	5:26:38 PM	✓20	2	2.00	2	0	0	4	579.21	3	287.1		1

wg

pg 5 of 10

MAT-05-1106

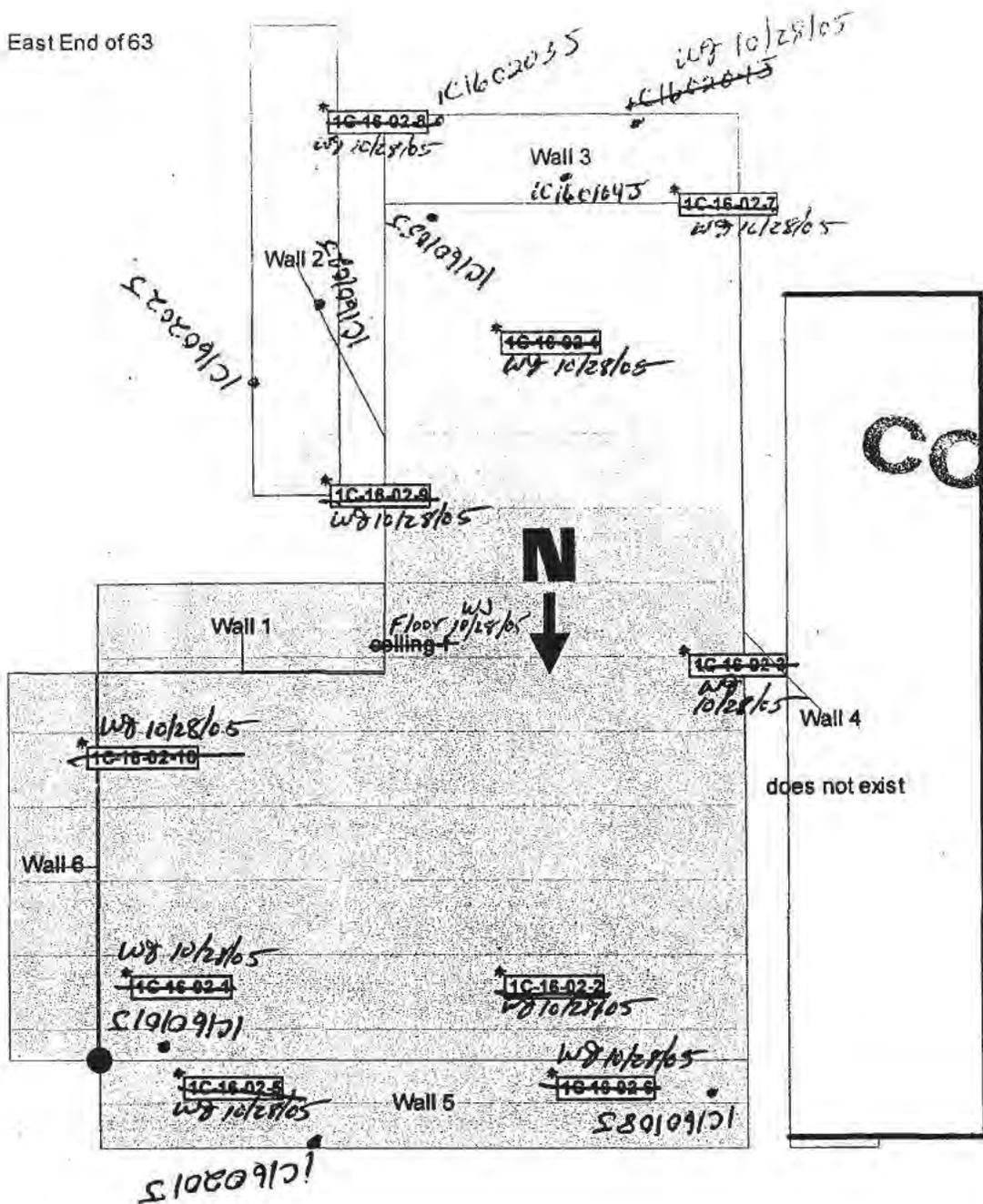
10/1/05

UPPER AND LOWER JUDGEMENTALS

MT-05-1106

pg 7 of 10

East End of 63

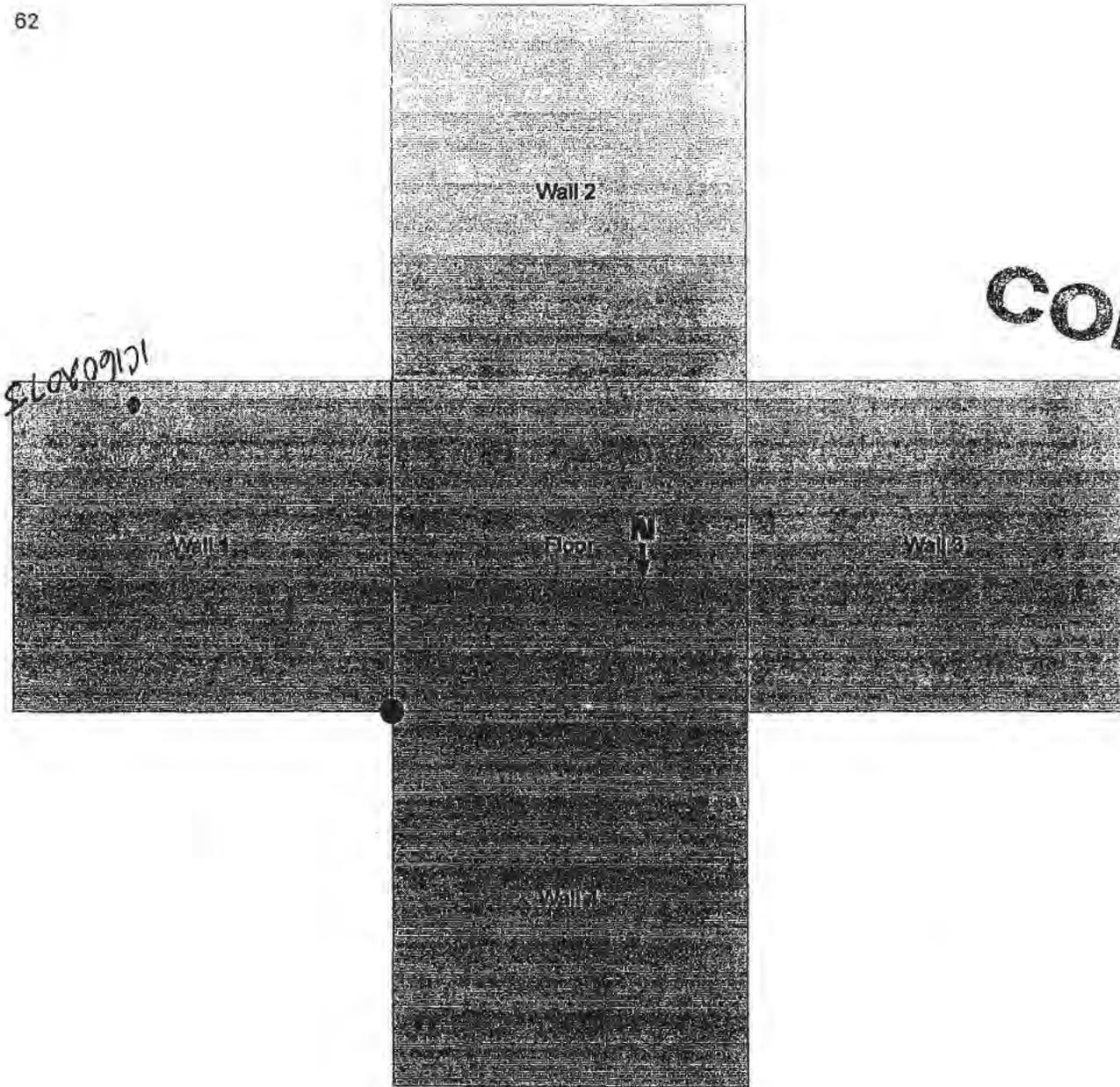


COPY

F-124/227

Upper and lower Judgements

62



COPY

F127/227

T-Building Upper and Lower Judgemental Survey Rms 63 & 62 1C16

RSDS# MT-05-1106

RCT:

RCT: N/A

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
Alpha	43-68 BKG:	0	EFF: 0.211	PROBE AREA: 126	cm ²	Surface Eff: 0.5	Detector #: 1				
Beta	43-68 BKG:	0	EFF: 0.305	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				
ALPHA	1C160101J	5855		5921	1	1	10/28/05	7:16	17	120	64
ALPHA	1C160102J	5855		5921	1	2	10/28/05	7:20	3	120	11
ALPHA	1C160103J	5855		5921	1	3	10/28/05	7:25	11	120	41
ALPHA	1C160104J	5855		5921	1	4	10/28/05	7:32	7	120	26
ALPHA	1C160105J	5855		5921	1	5	10/28/05	7:37	8	120	30
ALPHA	1C160106J	5855		5921	1	6	10/28/05	7:49	21	120	79
ALPHA	1C160107J	5855		5921	1	7	10/28/05	8:14	8	120	30
ALPHA	1C160108J	5855		5921	1	8	10/28/05	9:13	5	120	19
ALPHA	1C160109J	5855		5921	1	9	10/28/05	9:17	20	120	75
ALPHA	1C160110J	5855		5921	1	10	10/28/05	9:21	9	120	34
ALPHA	1C160201J	5855		5921	1	11	10/28/05	9:31	4	120	15
ALPHA	1C160202J	5855		5921	1	12	10/28/05	9:36	7	120	26
ALPHA	1C160203J	5855		5921	1	13	10/28/05	9:40	7	120	26
ALPHA	1C160204J	5855		5921	1	14	10/28/05	9:44	6	120	23
ALPHA	1C160205J	5855		5921	1	15	10/28/05	9:48	5	120	19
ALPHA	1C160206J	5855		5921	1	16	10/28/05	9:53	5	120	19
ALPHA	1C160207J	5855		5921	1	17	10/28/05	9:56	3	120	11
ALPHA	1C160208J	5855		5921	1	18	10/28/05	10:00	2	120	8
ALPHA	1C160209J	5855		5921	1	19	10/28/05	10:04	5	120	19
ALPHA	1C160210J	5855		5921	1	20	10/28/05	10:08	4	120	15 ✓
BETA	1C160101J	5855		5921	2	21	10/28/05	7:18	196	60	1886
BETA	1C160102J	5855		5921	2	22	10/28/05	7:21	146	60	1405
BETA	1C160103J	5855		5921	2	23	10/28/05	7:26	170	60	1635
BETA	1C160104J	5855		5921	2	24	10/28/05	7:33	98	60	943
BETA	1C160105J	5855		5921	2	25	10/28/05	7:38	73	60	702
BETA	1C160106J	5855		5921	2	26	10/28/05	7:50	159	60	1530
BETA	1C160107J	5855		5921	2	27	10/28/05	8:15	122	60	1174
BETA	1C160108J	5855		5921	2	28	10/28/05	9:14	142	60	1366
BETA	1C160109J	5855		5921	2	29	10/28/05	9:18	164	60	1578
BETA	1C160110J	5855		5921	2	30	10/28/05	9:22	203	60	1953
BETA	1C160201J	5855		5921	2	31	10/28/05	9:33	136	60	1308
BETA	1C160202J	5855		5921	2	32	10/28/05	9:37	114	60	1097
BETA	1C160203J	5855		5921	2	33	10/28/05	9:41	146	60	1405
BETA	1C160204J	5855		5921	2	34	10/28/05	9:45	136	60	1308
BETA	1C160205J	5855		5921	2	35	10/28/05	9:49	95	60	914
BETA	1C160206J	5855		5921	2	36	10/28/05	9:54	108	60	1039
BETA	1C160207J	5855		5921	2	37	10/28/05	9:57	227	60	2184
BETA	1C160208J	5855		5921	2	38	10/28/05	10:01	128	60	1231
BETA	1C160209J	5855		5921	2	39	10/28/05	10:05	139	60	1337
BETA	1C160210J	5855		5921	2	40	10/28/05	10:09	156	60	1501 ✓
<i>N/A</i>											

COPY

12/29/27

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) <u>T BLDG. Rm 62</u>	SURVEY NO. <u>MT-05-1119</u>
PURPOSE: <u>SCAN OF FLOOR AND WALLS</u> <u>IC16</u>	RWP NO. <u>N/A</u>
	DATE: <u>11/1/05</u>
	TIME: <u>1445</u>

MAP/DRAWING

CONTAINS 5 ELEVATED SPOTS
See MT-05-1120 FOR DETAILS

COPY

see attache map

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr ($\beta + \gamma$) 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
<u>2350</u>	<u>5855/5921</u>	<u>6/9/06</u>
 	 	
 	 	

Completed by: (Signature) <u>Wayne Jones</u>	Date: <u>11/1/05</u>
Completed by: (Print Name) <u>WAYNE JONES</u>	
Counted by: (Signature) <u>N/A</u>	HP# <u>N/A</u> Date: <u>N/A</u>
Counted by: (Print Name) <u>N/A</u>	
Reviewed/Approved by: (Signature) <u>Jerry Taylor</u>	Date: <u>11-17-05</u>
Reviewed/Approved by: (Print Name) <u>Jerry Taylor</u>	

F150/227 *CPM*

Scan of floor AND walls.

Scan of walls is 100% Alpha/Beta below 7' AND

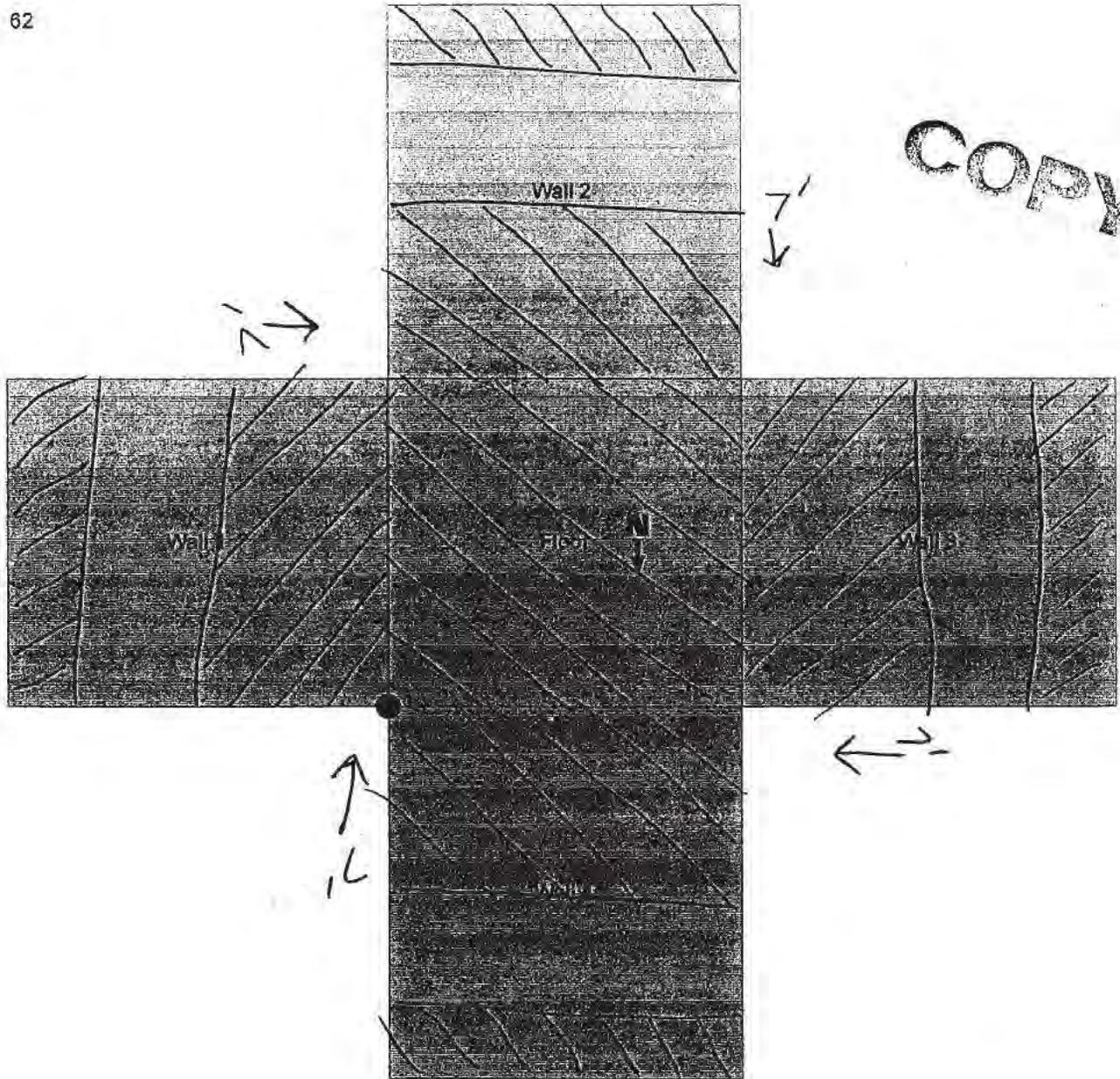
50% Alpha/Beta Above 7'

SCAN OF FLOOR IS 100% FOR Alpha/Beta

used 11-1-05 ✓
5855/5921

Col Date 6/9/06

62



F132/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T BLDG	Rm 62	SURVEY NO. MT-05-1120
PURPOSE: DIRECTS ON ELEVATED AREAS FOUND DURING SCAN		RWP NO. N/A
		DATE: 11/1/05
	IC16	TIME: 1515

MAP/DRAWING

5 ELEVATED READINGS IC160102K, IC160103K,
IC160104K, IC160105K
IC160106K

COPY

See attached map

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

= 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	5855/5921	6/9/06
 	 	
 	 	

Completed by: (Signature) <i>Wayne Jones</i>	Date: 11/1/05
Completed by: (Print Name) Wayne Jones	
Counted by: (Signature) <i>see attached</i>	HP# N/A Date: N/A
Counted by: (Print Name) see attached	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: 11-17-05
Reviewed/Approved by: (Print Name) Jerry Taylor	

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Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_006
 Batch Ended: 11/1/05 15:49
 Cal. Due Date: 11/17/05
 Serial Number: 26966-3

Batch ID: ¹¹²⁰MT-05-1120 W.JONES (7) AG
_{11/2/05}

MT-05-1120

Detector ID	Sample ID
A1	1
A2	2
A3	3
A4	4
B1	5
B2	6
B3	✓7

Alpha Activity		
DPM	σ	flags
0.00	2.20	
0.00	2.00	
1.77	2.27	
0.00	2.10	
0.00	1.90	
0.00	1.87	
0.00	2.20	

Beta Activity		
DPM	σ	flags
0.00	1.86	
0.00	1.18	
0.00	1.27	
0.00	1.22	
0.54	1.69	
0.00	1.59	
0.31	1.88	

wj

wj

F-135/2027

TAB

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\20051101_1909.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1120.001
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				

P5 407

MT-05-1120

F136/237

Protocol# 4 - MARSSIM_Smear_4.lsa

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#
11/1/05	7:10:25 PM	-1	10.00		10	9	11	6	616.91	0	19.9	B	4
11/1/05	7:21:16 PM	0	2.00		337	322	0	1	548.06	652	7.8		4
11/1/05	7:23:57 PM	1	2.00		0	0	0	0	544.46	0	0.0		4
11/1/05	7:26:40 PM	2	2.00		36	35	0	1	351.07	90	27.4		4
11/1/05	7:29:23 PM	3	2.00		13	11	0	2	365.62	32	54.6		4
11/1/05	7:32:07 PM	4	2.00		4	4	0	0	356.06	10	144.2		4
11/1/05	7:34:50 PM	5	2.00		2	2	0	0	495.02	5	220.2		4
11/1/05	7:37:32 PM	6	2.00		10	11	0	2	386.44	24	65.4		4
11/1/05	7:40:14 PM	7	2.00		2	2	3	4	425.47	4	297.0		4

wg

Pg 5 of 7

MT-05-1120

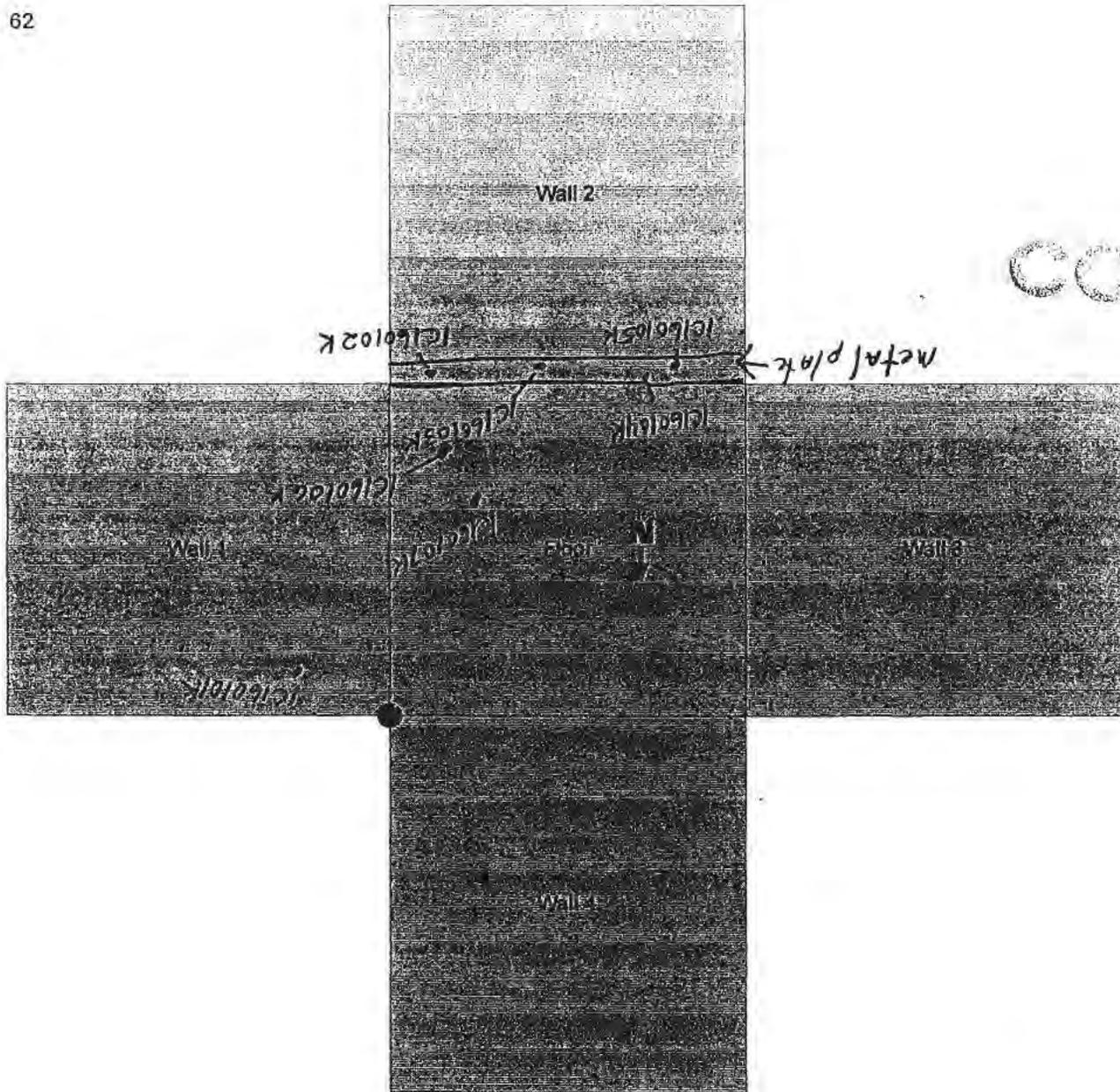
F 137/227

TKB

DIRECTS ON ELEVATED AREAS
FOUND DURING SCAN

MT-05-1120 pg 6 of 7

62



COPY

F138/227

T-Building Directs On Alarmed Areas Survey Rm62 1C16

RSDS# MT-05-1120

RCT: [REDACTED]

RCT: _____

Alpha	43-68 BKG:	0	EFF:	0.211 ✓	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.155 ✓	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	1C160101K	5855	[REDACTED]	5921	1	1	11/1/05	13:32	11	120	41
ALPHA	1C160102K	5855	[REDACTED]	5921	1	2	11/1/05	13:36	32	120	120
ALPHA	1C160103K	5855	[REDACTED]	5921	1	3	11/1/05	13:40	79	120	297
ALPHA	1C160104K	5855	[REDACTED]	5921	1	4	11/1/05	13:44	106	120	399
ALPHA	1C160105K	5855	[REDACTED]	5921	1	5	11/1/05	13:48	38	120	143
ALPHA	1C160106K	5855	[REDACTED]	5921	1	6	11/1/05	13:53	67	120	252
ALPHA	1C160107K	5855	[REDACTED]	5921	1	7	11/1/05	13:57	24	120	90
BETA	1C160101K	5855	[REDACTED]	5921	2	8	11/1/05	13:33	147	60	1414
BETA	1C160102K	5855	[REDACTED]	5921	2	9	11/1/05	13:37	176	60	1693
BETA	1C160103K	5855	[REDACTED]	5921	2	10	11/1/05	13:41	162	60	1558
BETA	1C160104K	5855	[REDACTED]	5921	2	11	11/1/05	13:45	180	60	1732
BETA	1C160105K	5855	[REDACTED]	5921	2	12	11/1/05	13:50	150	60	1443
BETA	1C160106K	5855	[REDACTED]	5921	2	13	11/1/05	13:54	186	60	1789
BETA	1C160107K	5855	[REDACTED]	5921	2	14	11/1/05	13:58	180	60	1732

COPY

F139/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) <i>T BLDG Rm 63</i>	SURVEY NO. <i>MT-05-1125</i>
PURPOSE: <i>upper station / DOSE RATE SURVEY</i> <i>1C16</i>	RWP NO. <i>N/A</i>
	DATE: <i>11/2/05</i>
	TIME: <i>1445</i>

MAP/DRAWING

Scanned an area 1 meter² around each ceiling station

COPY

*micro rem BKG 5µR/hr
micro rem Reading 5µR/hr*

See attached map

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
<i>2350</i>	<i>5855/5921</i>	<i>6/9/06</i>
<i>THERMO MICRO</i>	<i>3979</i>	<i>4/7/06</i>
 	 	
 	 	

Completed by: (Signature) <i>Wayne Jones</i>	Date: <i>11/2/05</i>
Completed by: (Print Name) <i>Wayne Jones / J. Hollabaugh</i>	
Counted by: (Signature) <i>See attached</i>	HP# <i>N/A</i> Date: <i>N/A</i>
Counted by: (Print Name)	
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: <i>11-15-05</i>
Reviewed/Approved by: (Print Name) <i>Jerry Taylor</i>	

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
1	See attached			IC1602015
2				IC1602025
3				IC1602035
4				IC1602045
5				IC1602055
6				IC1602065
7				IC1602075
8				IC1602085
9				IC1602095
10				IC1602105
11				IC1602115
12				IC1602125
13				IC1602135
14				IC1602145
15				IC1602155
16				IC1602165
17				IC1602175
18				IC1602185
19				IC1602195
20	✓	✓	✓	IC1602205
N A				

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

COMMENTS:

NOTES:

- See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
- 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.
- Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If needed, mark N/A.

pg 3 of 9

MT-05-1125

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_011
Batch Ended: 11/2/05 17:35
Cal. Due Date: 11/17/05
Serial Number: 26966-3

COPY

Batch ID: MT-05-1125 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	flags
1.74	2.19	
1.57	2.02	
0.00	2.27	
0.00	2.16	
0.00	1.88	
0.00	1.89	
0.00	2.20	
0.00	1.99	
0.00	2.06	
0.00	1.95	
0.00	2.06	
0.00	1.95	
0.00	2.05	
0.00	2.15	
0.00	2.09	
0.00	2.06	
0.00	2.18	
0.00	2.00	
0.00	2.27	
0.00	2.13	

WJ

Beta Activity		
DPM	σ	flags
0.00	1.33	
0.26	1.65	
0.00	1.27	
3.94	2.71	
0.00	1.21	
1.02	1.94	
0.31	1.88	
0.37	1.70	
0.26	1.74	
2.71	2.25	
0.00	1.22	
0.00	1.13	
0.00	1.25	
0.00	1.19	
0.00	1.25	
1.37	2.03	
0.00	1.33	
0.00	1.18	
0.00	1.27	
1.53	2.10	

WJ

F-142/227

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\20051103_1059.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1125.001
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 Units Reference Date Reference Time
A

60488
5811-50-1W

F143/227

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#
11/3/05	11:00:03 AM	-1	10.00		9	8	12	9	620.21	0	21.6	B	4
11/3/05	11:10:53 AM	0	2.00		340	323	0	0	551.22	655	7.8		4
11/3/05	11:13:35 AM	1	2.00		0	1	0	6	531.69	1	1001.8		4
11/3/05	11:16:16 AM	2	2.00		0	0	0	14	587.77	0	0.0		4
11/3/05	11:18:58 AM	3	2.00		0	0	0	19	584.93	0	0.0		4
11/3/05	11:21:39 AM	4	2.00		0	1	0	6	576.40	1	1001.8		4
11/3/05	11:24:21 AM	5	2.00		7	5	0	19	529.77	14	82.6		4
11/3/05	11:27:03 AM	6	2.00		45	42	0	4	525.91	89	23.3		4
11/3/05	11:29:46 AM	7	2.00		177	162	0	1	583.30	333	10.9		4
11/3/05	11:32:28 AM	8	2.00		5	4	0	18	564.48	10	106.6		4
11/3/05	11:35:09 AM	9	2.00		6	5	0	29	532.18	13	90.3		4
11/3/05	11:37:51 AM	10	2.00		5	4	0	30	536.48	10	111.1		4
11/3/05	11:40:33 AM	11	2.00		0	0	4	13	604.39	0	0.0		4
11/3/05	11:43:15 AM	12	2.00		1	1	0	11	585.53	2	492.2		4
11/3/05	11:45:57 AM	13	2.00		6	5	0	7	618.55	10	100.2		4
11/3/05	11:48:39 AM	14	2.00		1	2	0	10	611.00	3	331.0		4
11/3/05	11:51:21 AM	15	2.00		62	60	0	1	465.29	131	19.3		4
11/3/05	11:54:03 AM	16	2.00		0	0	0	13	623.87	0	0.0		4
11/3/05	11:56:50 AM	17	2.00		3	3	0	8	614.33	6	151.2		4
11/3/05	11:59:31 AM	18	2.00		0	0	0	17	563.07	1	1001.8		4
11/3/05	12:02:13 PM	19	2.00		7	7	0	13	551.75	14	79.8		4
11/3/05	12:04:55 PM	20	2.00		2	2	0	5	545.34	4	251.9		4

wg

*bbs
pg 5 of 9
MT-50-1W*

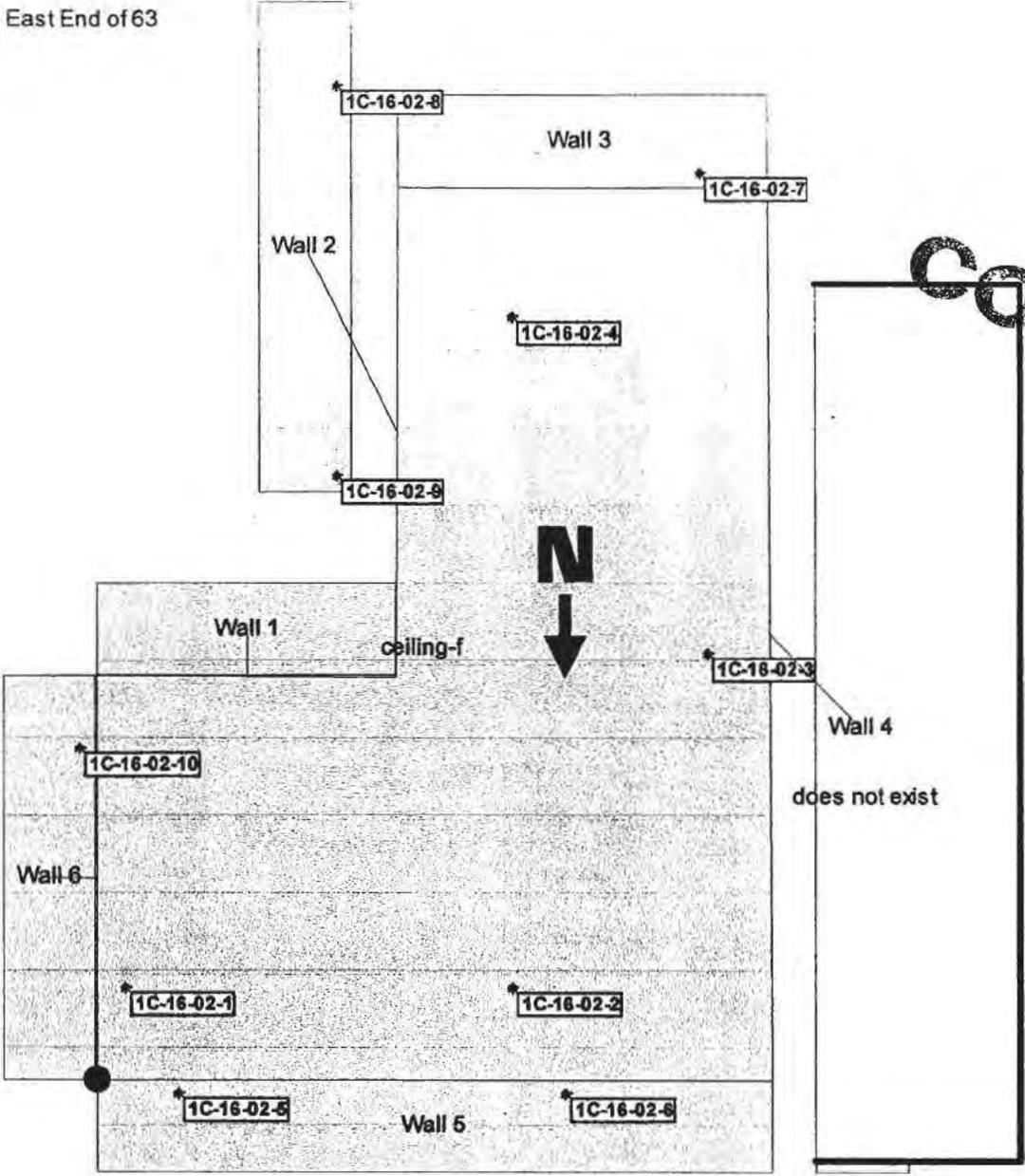
*F-144
1227*

Area: East End of 63				
Label	Type	Surface	LX	LY
1C-16-02-1	Systematic	ceiling-f	1	3
1C-16-02-2	Systematic	ceiling-f	14	3
1C-16-02-3	Systematic	ceiling-f	20	14
1C-16-02-4	Systematic	ceiling-f	14	25
1C-16-02-5	Systematic	Wall 5	19	0
1C-16-02-6	Systematic	Wall 5	7	0
1C-16-02-7	Systematic	Wall 3	10	0
1C-16-02-8	Systematic	Wall 2	13	0
1C-16-02-9	Systematic	Wall 2	1	0
1C-16-02-10	Systematic	Wall 6	11	0

COPY

Area: West End of 63				
Label	Type	Surface	LX	LY
1C-16-02-11	Systematic	ceiling-f	10	10
1C-16-02-12	Systematic	ceiling-f	3	21
1C-16-02-13	Systematic	ceiling-f	16	21
1C-16-02-14	Systematic	ceiling-f	10	32
1C-16-02-15	Systematic	Wall 1	3	10
1C-16-02-16	Systematic	Wall 2	8	10
1C-16-02-17	Systematic	Wall 3	3	10
1C-16-02-18	Systematic	Wall 3	15	10
1C-16-02-19	Systematic	Wall 4	6	10
1C-16-02-20	Systematic	Wall 6	0	10

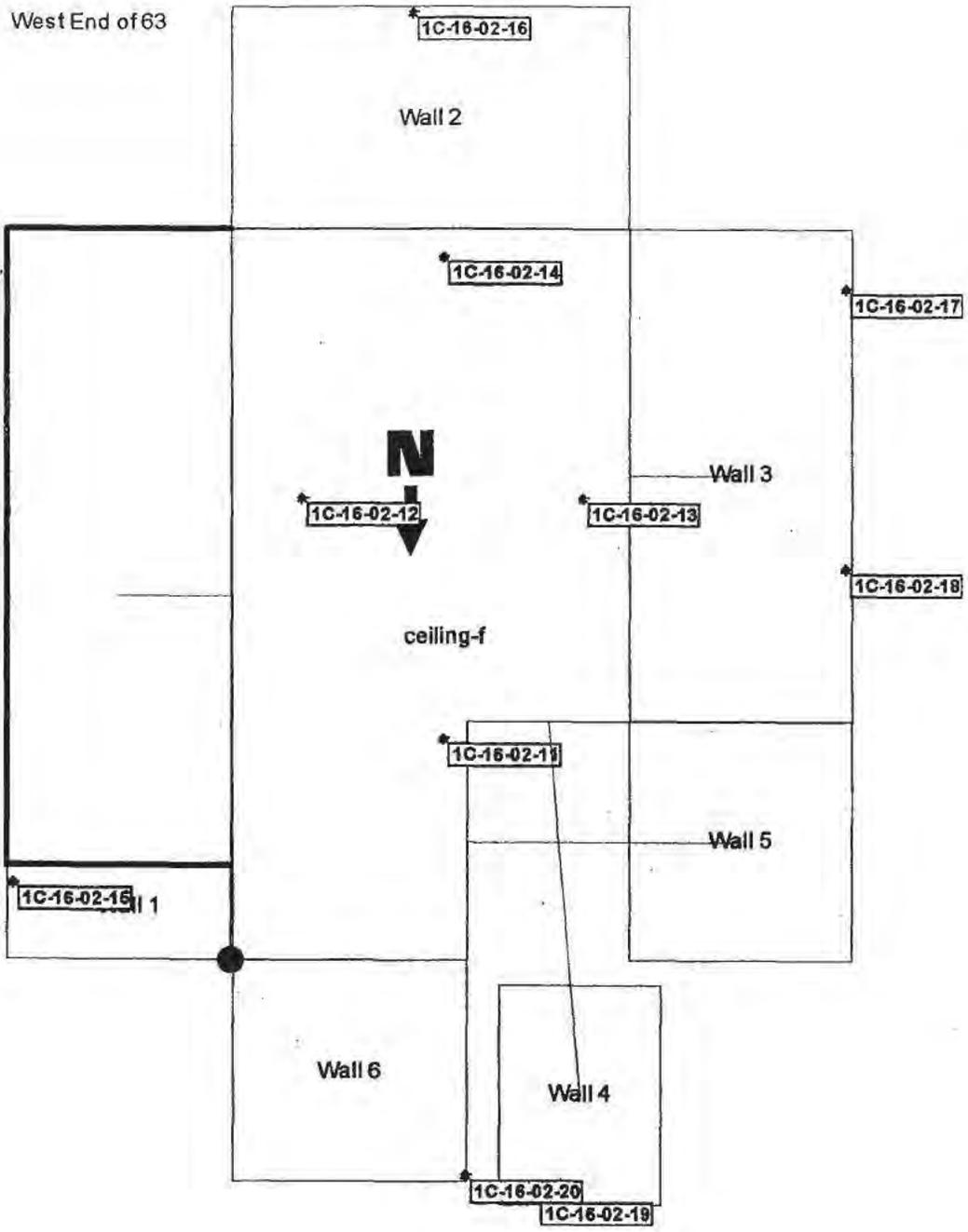
East End of 63



COPY

1C-16-02

scan an area of approximately 1m2 around each ceiling location



COPY

T-Building Upper Static Survey Rm 63 1C16

RSDS# MT-05-1125

RCT:

RCT:

Alpha	43-68 BKG:	0	EFF:	0.211 ✓	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1657 ✓	PROBE AREA:	125	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

COPY

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	1C160201S	5855		5921	1	1	11/2/05	10:15	6	120	23
ALPHA	1C160202S	5855		5921	1	2	11/2/05	10:20	5	120	19
ALPHA	1C160203S	5855		5921	1	3	11/2/05	10:26	2	120	8
ALPHA	1C160204S	5855		5921	1	4	11/2/05	10:32	5	120	19
ALPHA	1C160205S	5855		5921	1	5	11/2/05	10:39	1	120	4
ALPHA	1C160206S	5855		5921	1	6	11/2/05	11:37	6	120	23
ALPHA	1C160207S	5855		5921	1	7	11/2/05	11:47	3	120	11
ALPHA	1C160208S	5855		5921	1	8	11/2/05	11:56	7	120	26
ALPHA	1C160209S	5855		5921	1	9	11/2/05	12:03	6	120	23
ALPHA	1C160210S	5855		5921	1	10	11/2/05	12:09	2	120	8
ALPHA	1C160211S	5855		5921	1	11	11/2/05	12:49	4	120	15
ALPHA	1C160212S	5855		5921	1	12	11/2/05	12:56	4	120	15
ALPHA	1C160213S	5855		5921	1	13	11/2/05	13:04	4	120	15
ALPHA	1C160214S	5855		5921	1	14	11/2/05	13:09	2	120	8
ALPHA	1C160215S	5855		5921	1	15	11/2/05	13:15	2	120	8
ALPHA	1C160216S	5855		5921	1	16	11/2/05	13:23	5	120	19
ALPHA	1C160217S	5855		5921	1	17	11/2/05	13:29	2	120	8
ALPHA	1C160218S	5855		5921	1	18	11/2/05	13:35	4	120	15
ALPHA	1C160219S	5855		5921	1	19	11/2/05	13:41	4	120	15
ALPHA	1C160220S	5855		5921	1	20	11/2/05	13:46	2	120	8
BETA	1C160201S	5855		5921	2	21	11/2/05	10:16	132	60	1264
BETA	1C160202S	5855		5921	2	22	11/2/05	10:21	98	60	939
BETA	1C160203S	5855		5921	2	23	11/2/05	10:27	96	60	920
BETA	1C160204S	5855		5921	2	24	11/2/05	10:33	119	60	1140
BETA	1C160205S	5855		5921	2	25	11/2/05	10:41	150	60	1437
BETA	1C160206S	5855		5921	2	26	11/2/05	11:38	108	60	1035
BETA	1C160207S	5855		5921	2	27	11/2/05	11:48	116	60	1111
BETA	1C160208S	5855		5921	2	28	11/2/05	11:57	123	60	1178
BETA	1C160209S	5855		5921	2	29	11/2/05	12:04	132	60	1264
BETA	1C160210S	5855		5921	2	30	11/2/05	12:10	129	60	1236
BETA	1C160211S	5855		5921	2	31	11/2/05	12:50	160	60	1533
BETA	1C160212S	5855		5921	2	32	11/2/05	12:57	156	60	1494
BETA	1C160213S	5855		5921	2	33	11/2/05	13:05	176	60	1686
BETA	1C160214S	5855		5921	2	34	11/2/05	13:11	123	60	1178
BETA	1C160215S	5855		5921	2	35	11/2/05	13:16	114	60	1092
BETA	1C160216S	5855		5921	2	36	11/2/05	13:24	95	60	910
BETA	1C160217S	5855		5921	2	37	11/2/05	13:30	110	60	1054
BETA	1C160218S	5855		5921	2	38	11/2/05	13:36	117	60	1121
BETA	1C160219S	5855		5921	2	39	11/2/05	13:42	136	60	1303
BETA	1C160220S	5855		5921	2	40	11/2/05	13:47	132	60	1264
			N								
						A					

F-148/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	TBLDG Rm 63	SURVEY NO.	MT-05-1134
PURPOSE: Fiddler BCANS, DIRECTS AND 2350 SCANS & DIRECTS IN TRENCHES / DOSE RATE SURVEY IC16	RWP NO.	N/A	
	DATE:	11/3/05	
	TIME:	1420	

MAP/DRAWING

Fiddler BKG \pm 339.8 cpm

Micro Rem BKG 5 μ rem/hr.
micro Rem Reading 5 μ rem/hr.

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5892/5893	1/31/06
2360	5874/3966	6/13/06
Thermo	3979	4/7/06

Completed by: (Signature)	Wayne Jones	Date:	11/3/05
Completed by: (Print Name)	WAYNE JONES		
Counted by: (Signature)	See attached	HP#	N/A
Counted by: (Print Name)	↓		
Reviewed/Approved by: (Signature)	Jerry Taylor	Date:	11-15-05
Reviewed/Approved by: (Print Name)	Jerry Taylor		

F149229 Jone

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
1	see attached			IC160101T
2	↓	↓	↓	IC160102T
3	↓	↓	↓	IC160103T
4	↓	↓	↓	IC160104T
5	↓	↓	↓	IC160105T
6	↓	↓	↓	IC160106T
7	↓	↓	↓	IC160107T
8	↓	↓	↓	IC160108T
/				
A N				

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

COMMENTS:

NOTES:

- See MD-80038 10002 for calculations of WB, extremity and skin dose rates.
- 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.
- Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If needed, mark N/A.

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COPY

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_023
Batch Ended: 11/3/05 15:25
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: MT-05-1134 JONES (8) 11/03/05 TAS ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.20		0.00	1.86	
A2	2	0.00	2.00		0.00	1.18	
A3	3	0.00	2.27		0.00	1.27	
A4	4	1.71	2.10		0.00	1.22	
B1	5	0.76	1.98		5.08	2.93	
B2	6	0.00	1.92		2.13	2.24	
B3	7	0.00	2.18		0.00	1.34	
B4	8	0.00	1.97		0.00	1.21	

wj

wj

F15/227

Page 1 of 1 wj 11/8/05

TAS

Protocol# 3 - MARSSIM_Smear_3.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_3\20051107_0723.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1134.001
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				

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MT-05-1134 pg 5 of 7

11/7/05 7:58:30 AM

QuantaSmart (TM) - 1.31 - Serial# 423022

Page # 2 w9

Protocol# 3 - MARSSIM_Smear_3.lsa

User: 5801 11/8/05

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#
11/7/05	7:23:51 AM	-1		10.00	10	10	10	1	618.19	0	19.8	B	3
11/7/05	7:34:35 AM	0		2.00	218	207	3	1	521.78	431	9.8		3
11/7/05	7:37:16 AM	1		2.00	0	0	0	7	563.82	0	0.0		3
11/7/05	7:39:56 AM	2		2.00	0	0	0	0	599.33	0	0.0		3
11/7/05	7:42:37 AM	3		2.00	0	0	0	5	532.97	0	0.0		3
11/7/05	7:45:19 AM	4		2.00	0	0	0	13	366.55	0	0.0		3
11/7/05	7:48:00 AM	5		2.00	1	1	0	4	393.17	2	496.2		3
11/7/05	7:50:40 AM	6		2.00	0	0	2	8	533.37	0	0.0		3
11/7/05	7:53:22 AM	7		2.00	0	0	0	0	611.40	0	0.0		3
11/7/05	7:56:03 AM	8		2.00	0	0	0	8	622.25	0	0.0		3

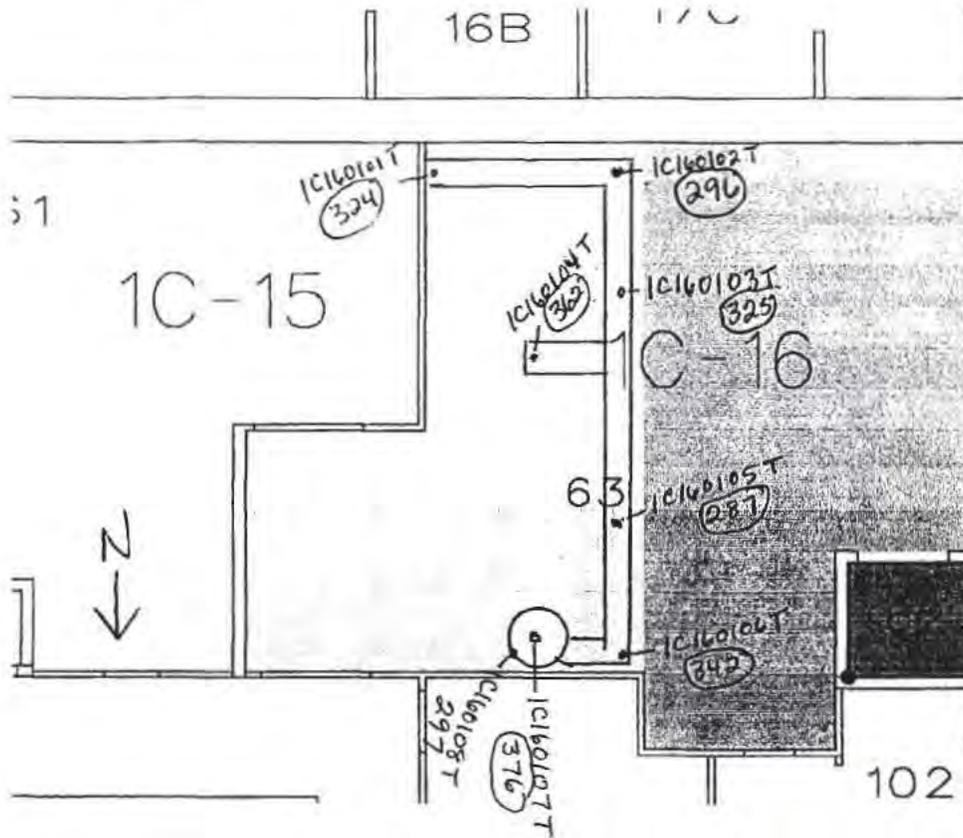
w9

F 153/227

1C-16
Class 1

Fiddler AND 2350 IN TRENCHES
Drains, vents, and utilities.

MT-05-1134 pg 6 of 7



COPY

Fiddler BKG 339.8
Fiddler Readings in circles (cpm)

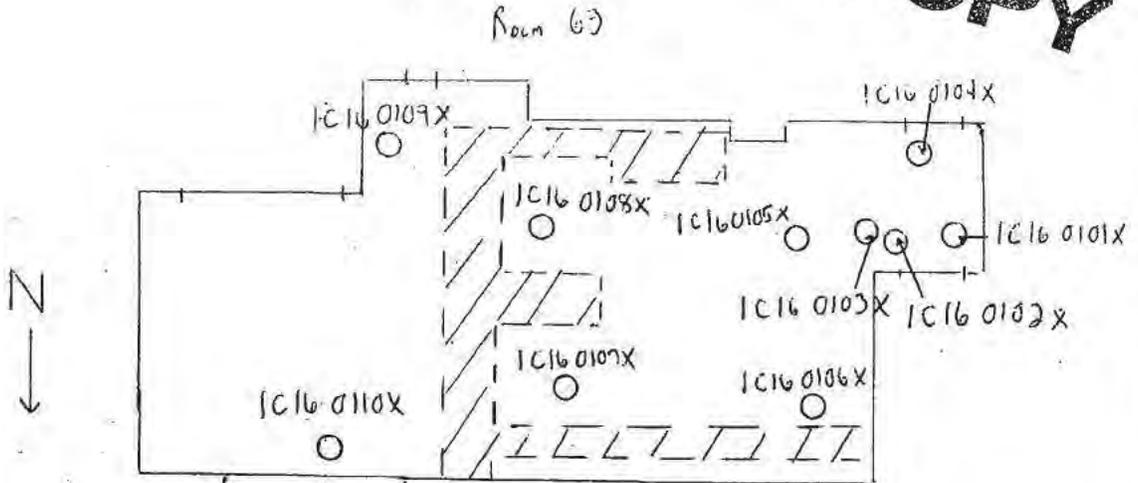
F-154/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) T- BLDG Room 63 / IC 16	SURVEY NO. MT-05-1155
PURPOSE: Investigational Survey of Suspected Elevated Spots (Res Rad Survey)	RWP NO. N/A
	DATE: 11-8-05
	TIME: 1000

MAP/DRAWING

COPY



See Attachment for α/β readings

CUT OUT AREA OF FLOOR

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

= mrem/hr neutron
 # = air sample number

= swipe number
 #/a or /b = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5857, 5859	10-4-06
N/A	N/A	N/A

Completed by: (Signature) <i>J. King</i>	H	Date: 11-8-05
Completed by: (Print Name) T. King		
Counted by: (Signature) N/A	HP#	Date:
Counted by: (Print Name) N/A		
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>		Date: 11-9-05
Reviewed/Approved by: (Print Name) Jerry Taylor		

F156/227 *gmc*

T-Building Room 63; Survey of Suspected Elevated Spots; 1C16

RSDS# MT-05-1155

RCT: [REDACTED]

RCT: N/A

COPY

Alpha	43-68 BKG:	0	EFF:	0.205 ✓	PROBE AREA:	126	cm ²	Surface Eff:	0.5	
Beta	43-68 BKG:	0	EFF:	0.135 ✓	PROBE AREA:	112	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	1C160101X	5857	[REDACTED]	5859	1	1	11/8/05	7:25	84	120	321
ALPHA	1C160102X	5857	[REDACTED]	5859	1	2	11/8/05	7:36	11	120	42
ALPHA	1C160103X	5857	[REDACTED]	5859	1	3	11/8/05	7:45	22	120	84
ALPHA	1C160104X	5857	[REDACTED]	5859	1	4	11/8/05	7:55	155	120	591
ALPHA	1C160105X	5857	[REDACTED]	5859	1	5	11/8/05	8:05	90	120	343
ALPHA	1C160106X	5857	[REDACTED]	5859	1	6	11/8/05	8:13	113	120	431
ALPHA	1C160107X	5857	[REDACTED]	5859	1	7	11/8/05	8:23	42	120	160
ALPHA	1C160108X	5857	[REDACTED]	5859	1	8	11/8/05	8:34	72	120	275
ALPHA	1C160109X	5857	[REDACTED]	5859	1	9	11/8/05	8:46	72	120	275
ALPHA	1C160110X	5857	[REDACTED]	5859	1	10	11/8/05	9:01	16	120	61
BETA	1C160101X	5857	[REDACTED]	5859	2	1	11/8/05	7:26	213	60	2062
BETA	1C160102X	5857	[REDACTED]	5859	2	2	11/8/05	7:37	169	60	1636
BETA	1C160103X	5857	[REDACTED]	5859	2	3	11/8/05	7:46	180	60	1742
BETA	1C160104X	5857	[REDACTED]	5859	2	4	11/8/05	7:56	226	60	2187
BETA	1C160105X	5857	[REDACTED]	5859	2	5	11/8/05	8:06	187	60	1810
BETA	1C160106X	5857	[REDACTED]	5859	2	6	11/8/05	8:14	162	60	1568
BETA	1C160107X	5857	[REDACTED]	5859	2	7	11/8/05	8:24	167	60	1616
BETA	1C160108X	5857	[REDACTED]	5859	2	8	11/8/05	8:35	233	60	2255
BETA	1C160109X	5857	[REDACTED]	5859	2	9	11/8/05	8:47	203	60	1965
BETA	1C160110X	5857	[REDACTED]	5859	2	10	11/8/05	9:02	158	60	1529

N
A

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of ^{JPT 11-25-05} 69 H 13

LOCATION: (BLDG./AREA/ROOM)	T-63	SURVEY NO.	MT-05-1181
PURPOSE:	POST JOB SURVEY / RESRAD IC14	RWP NO.	1623
		DATE:	11/11/05
		TIME:	1600

MAP/DRAWING

SEE PG 2 FOR SMEAR LOCATIONS -
 SEE PG 4 and 5 FOR SMEAR RESULTS -
 S PG 6 FOR MAP -



COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L-3030	5835	4/13/06
L-3030	5817	6/30/06

Completed by: (Signature)	<i>Scott Hollabaugh</i>	Date:	11/13/05
Completed by: (Print Name)	SCOTT HOLLABAUGH		
Counted by: (Signature)	SEE ATTACHED	HP#	
Counted by: (Print Name)	1 SHEET		
Reviewed/Approved by: (Signature)	<i>Jess Griffin</i>	Date:	1/20/06
Reviewed/Approved by: (Print Name)	Jess Griffin		

Home

05-MT-1181

13
5/1-25-05

11/14/05 1:25:27 PM

QuantaSmart (TM) - 1.31 - Serial# 423022

Page # 1

Protocol# 1 - MARSSIM_Smear_1.lsa

User: 5801

MARSSIM Smear Data

pg 3 of 13

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\20051114_1221.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-05-1181.001
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-

Regions	Half Life	Units	Reference Date	Reference Time
A				

COPY

11/14/227

Rest

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	DPML	A:2S%	MESSAGES	P#
11/14/05	12:22:24 PM	-1		10.00	10	9	11	3	623.93	0	20.3	B	1
11/14/05	12:33:10 PM	0		2.00	490	464	0	0	545.41	950	6.5		1
11/14/05	12:35:53 PM	1		2.00	0	0	0	8	515.16	0	0.0		1
11/14/05	12:38:35 PM	2		2.00	0	0	0	9	499.60	0	0.0		1
11/14/05	12:41:18 PM	3		2.00	0	0	0	5	400.98	0	0.0		1
11/14/05	12:44:02 PM	4		2.00	0	1	0	0	455.44	0	0.0		1
11/14/05	12:46:45 PM	5		2.00	0	0	3	15	430.33	0	0.0		1
11/14/05	12:49:27 PM	6		2.00	0	0	0	11	428.39	0	0.0		1
11/14/05	12:52:11 PM	7		2.00	0	0	3	10	421.31	0	0.0		1
11/14/05	12:54:54 PM	8		2.00	0	1	0	5	373.33	1	1493.6		1
11/14/05	12:57:38 PM	9		2.00	0	0	0	6	478.23	0	0.0		1
11/14/05	1:00:19 PM	10		2.00	0	0	1	6	475.81	0	0.0		1
11/14/05	1:03:02 PM	11		2.00	0	0	0	7	394.78	0	0.0		1
11/14/05	1:05:46 PM	12		2.00	0	0	1	7	385.19	0	0.0		1
11/14/05	1:08:29 PM	13		2.00	0	0	3	0	436.01	0	0.0		1
11/14/05	1:11:13 PM	14		2.00	0	0	0	9	420.45	0	0.0		1
11/14/05	1:13:56 PM	15		2.00	0	0	0	0	370.39	0	0.0		1
11/14/05	1:16:39 PM	16		2.00	0	0	1	8	401.15	0	0.0		1
11/14/05	1:19:47 PM	17		2.00	0	0	0	6	379.54	0	0.0		1
11/14/05	1:22:29 PM	18		2.00	0	0	0	5	430.99	0	0.0		1

✓
SH

✓
SH

COPY

F-162/227

COPY

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_053
 Batch Ended: 11/14/05 8:45
 Cal. Due Date: 11/17/05
 Serial Number: 26966-3

Batch ID: MT-05-1181 S. HOLLABAUGH [18] GWD ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	1.74	2.20		0.00	1.86	
A2	2	0.00	2.02		0.42	1.65	
A3	3	1.77	2.30		1.80	2.18	
A4	4	0.00	2.12		0.32	1.71	
B1	5	0.00	1.90		0.54	1.69	
B2	6	0.00	1.87		0.00	1.59	
B3	7	0.00	2.20		0.31	1.88	
B4	8	0.00	1.99		0.37	1.70	
C1	9	0.00	2.07		1.49	2.13	
C2	10	0.00	1.96		3.84	2.52	
C3	11	1.73	2.09		1.33	2.11	
C4	12	0.00	1.95		0.00	1.12	
D1	13	0.00	2.06		0.29	1.77	
D2	14	0.00	2.17		0.39	1.68	
D3	15	0.00	2.09		0.00	1.24	
D4	16	0.00	2.04		0.00	1.17	
A1	17	1.74	2.20		0.00	1.86	
A2	18	0.00	2.00		0.00	1.18	

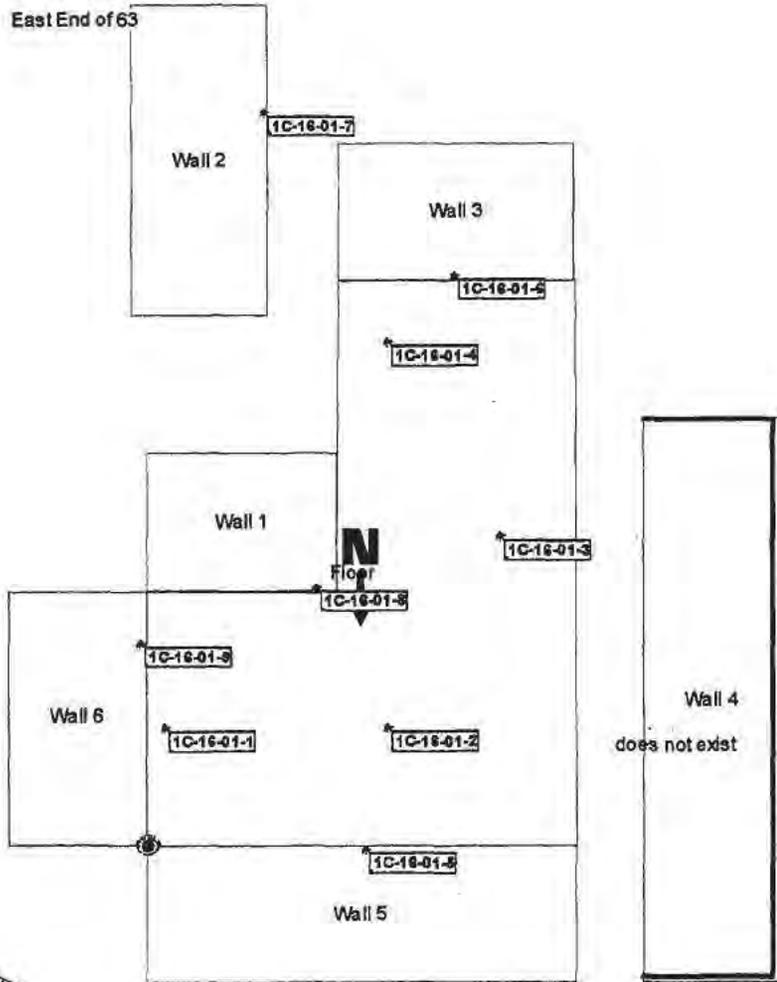
✓
SH

✓
SH

F-103/227

1C-16 Class 1

After a direct alpha and beta measurement are taken and the smear is taken, then collect a bulk sample at each static location on the floor. Composite bulk sample with bulk samples taken at judgmental locations on the floor.



Area: East End of 63				
Label	Type	Surface	LX	LY
1C-16-01-1	Systematic	Floor	1	6
1C-16-01-2	Systematic	Floor	12	6
1C-16-01-3	Systematic	Floor	18	16
1C-16-01-4	Systematic	Floor	12	26

COPY

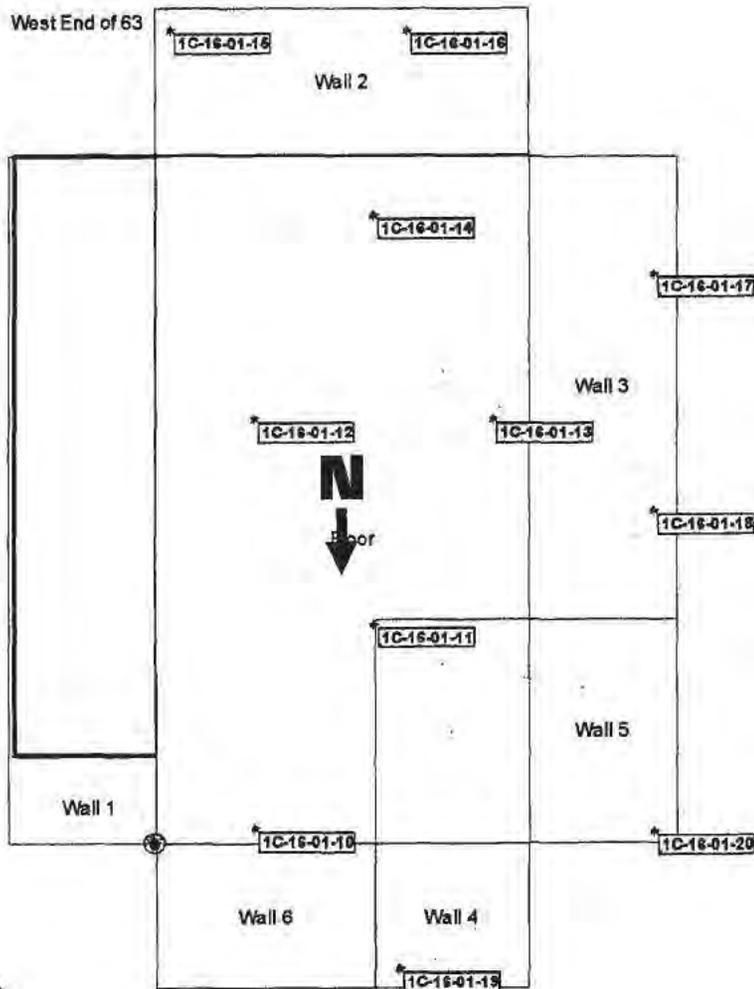
F165/227

*MT-05-1181
me
1-30-04
pg 7 of 11
13*

1C-16 Class 1

After a direct alpha and beta measurement are taken and the smear is taken, then collect a bulk sample at each static location on the floor.

Composite bulk sample with bulk samples taken at judgmental locations on the floor.



Area: West End of 63				
Label	Type	Surface	LX	LY
1C-16-01-10	Systematic	Floor	5	1
1C-16-01-11	Systematic	Floor	11	11
1C-16-01-12	Systematic	Floor	5	20
1C-16-01-13	Systematic	Floor	16	20
1C-16-01-14	Systematic	Floor	11	30

COPY

F-166/229

*MT-05-1181pg 8 of 13
mk 1-30-04*

Laboratory ID#: 0506376 & 0506377
 Project/function: T Bldg.
 Submitted: Nov. 11, 2005
 Submitted by: Jared Hollabaugh
 Point of Contact: R. Coblenz 608-8206
 RSDS#: Concrete Dust
 Date: Dec. 13, 2005

COPY

Isotope	pCi/g	Uncertainty +/-	LDL
Th-227	0.06	0.02	0.02
Th-228	0.24	0.03	0.02
Th-230	0.39	0.04	0.02
Th-232	0.19	0.03	0.02

Isotope	pCi/g	Uncertainty +/-	LDL
Th-227	0.13	0.03	0.02
Th-228	0.23	0.04	0.05
Th-230	0.52	0.07	0.02
Th-232	0.19	0.04	0.02

Charles A. Phillips _____ *12/15/05*
 Analyst HP# _____ Date

Lori Jones _____ *12-15-05*
 Data Verification HP# _____ Date

F.168/
 227

COPY

SOIL ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL08741
 File ID: 25000094.s0
 Priority: Yes

Description\Location

T-63
 Long Count

Collector:
 Date Received: 11/17/05
 Date Collected: 11/11/05

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0.01	0.24
Cs-137	*	0.01	0.06
Pb-210	*	0.02	0.63
Ra-226		0.83	0.67
Ac-227 (D)	*	0	0.3
Th-230	*	1.88	5.55
Th-232 (D)		0.58	0.53
Pu-238	*	1.03	3.93
Am-241		0.06	0.06

COPY

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Σ
 DOT 0.01 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:

Date: 11/21/05 Counted By: Analyzed By: Initials

F169/229
CP

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Laboratory ID#: 0600345 & 0600346
Project/function: T Bldg.
Submitted: Nov. 11, 2005
Submitted by: Jared Hollabaugh
Point of Contact: R. Coblenz 608-8206
RSDS#: Concrete Dust
Date: Jan. 26, 2006

Lab ID	0600345		
Sample Location	T-61		
Isotope	pCi/g	Uncertainty +/-	LDL
Am-241	0.05	0.01	0.01
Pu238	<LDL	0.01	0.04
Pu-239	<LDL	0.01	0.04

Lab ID	0600346		
Sample Location	T-63		
Isotope	pCi/g	Uncertainty +/-	LDL
Am-241	0.10	0.02	0.07
Pu238	<LDL	0.01	0.09
Pu-239	<LDL	0.01	0.03

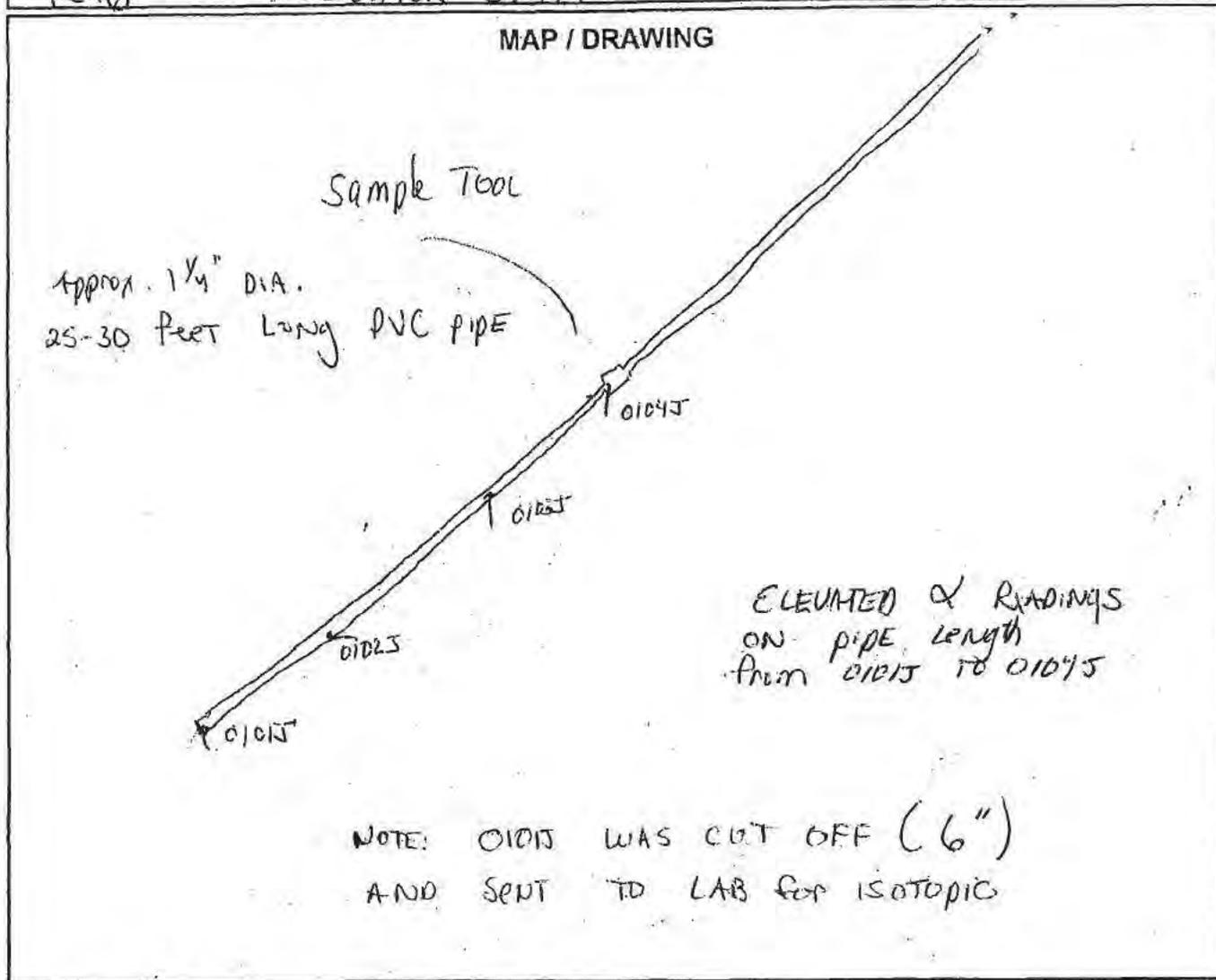
Charles A. Phillipi _____ 1/26/06
Analyst HP# Date

Greg DeBard _____ 1/26/06
Data Verification HP# Date

COPY
F171/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T. BLDG Rm 11	SURVEY NO.	MT 06 0041
PURPOSE: Survey Sample TOOL USED TO survey sediment AT BOTTOM OF ELEVATOR SHAFT 1C16		RWP NO.	N/A
		DATE:	11/2/06
		TIME:	1100



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/100cm²

INSTRUMENTS USED

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

Completed by: (Signature)	<i>[Signature]</i>	Date:	11/2/06
Completed by: (Print Name)	S. RICHARDSON G. WOODBINE		
Counted by: (Signature)	<i>[Signature]</i>	HP#	
Counted by: (Print Name)	ASSETS		F172/227
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	11/2/06
Reviewed/Approved by: (Print Name)	Jess Crilly		

[Handwritten initials]

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
1	SEE	ATTACHED		0101J
2				0102J
3				0103J
4	SEE	ATTACHED		0104J
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17			N/A	
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52			N/A	
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				

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.

F173/227

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\20060112_1330.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0041.001
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

PA 30F 79
020101
Jan

END

F-124
/227



1-13-06

1/12/06 1:55:59 PM

QuantaSmart (TM) - 1.31 - Serial# 423022

Page # 2

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#
1/12/06	1:30:44 PM	-1		10.00	10	10	11	3	608.09	0	19.7	B	1
1/12/06	1:41:33 PM	0		2.00	492	466	1	0	578.37	927	6.5		1
1/12/06	1:44:39 PM	1		2.00	0	0	6	52	91.44	0	*****	E	1
1/12/06	1:47:23 PM	2		2.00	4	4	3	31	331.99	11	141.5		1
1/12/06	1:50:07 PM	3		2.00	0	0	4	47	335.37	0	0.0		1
1/12/06	1:52:49 PM	4		2.00	0	0	3	26	413.08	0	0.0		1

Note: Sample # 1 was heavily loaded a dark matter causing a loss
in efficiency for tritium analysis.
GWD 1/12/06

COPY

1-175/227

pg 4 of 9
MT-06-0011
GWD

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_025
Batch Ended: 1/12/06 12:47
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0041 RICHARDSON [4] GWD

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.18		0.00	1.31	
A2	2	3.59	2.84		1.18	2.01	
A3	3	0.00	2.30		1.67	2.18	
A4	4	0.00	2.10		0.00	1.21	

COPY

1-17-06/227

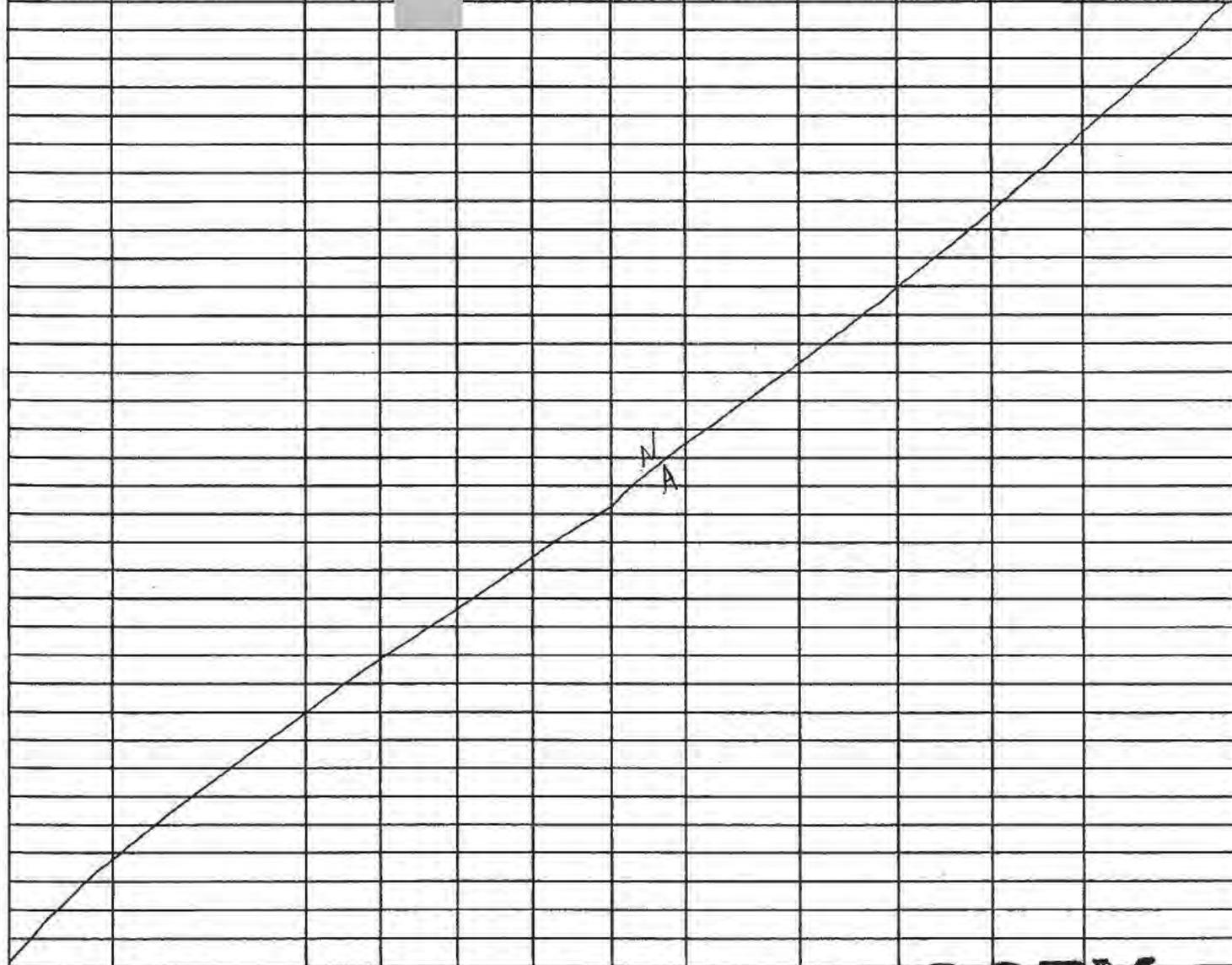
01/13/06
045 AF
9

T-Building 1C16 sample tool rm. 62

RSDS# MT-06-0041 RCT: RCT: 8728

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:	0.166	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	564	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	564	cm ²	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	1C160101J	5920		5929	1	1	1/12/06	7:30	141	120	533
ALPHA	1C160102J	5920		5929	1	2	1/12/06	7:33	100	120	378
ALPHA	1C160103J	5920		5929	1	3	1/12/06	7:36	25	120	94
ALPHA	1C160104J	5920		5929	1	4	1/12/06	7:40	56	120	212
BETA	1C160101J	5920		5929	2	1	1/12/06	7:31	254	60	2429
BETA	1C160102J	5920		5929	2	2	1/12/06	7:34	202	60	1932
BETA	1C160103J	5920		5929	2	3	1/12/06	7:38	123	60	1176
BETA	1C160104J	5920		5929	2	4	1/12/06	7:41	123	60	1176



COPY

F-177/227

Pg 949

MT-06-0041

Laboratory ID#: 0600161
Project/function: T Bldg.
Submitted: Jan 12, 2006
Submitted by: B. Coblenz
Point of Contact: B. Coblenz x3762
RSDS#: MT-06-0042
Date: Jan. 26, 2006

Lab ID 0600161
 Sample Location T-Bldg T-62 Elevator Shaft

Isotope	pCi/Sample	Uncertainty +/-	LDL
Pu-238	0.05	0.03	0.03
Pu-239/240	1.09	0.12	0.01
Th-227	0.04	0.01	0.01
Th-228	<LDL	0.02	0.04
Th-230	<LDL	0.02	0.03
Th-232	<LDL	0.01	0.03

*Note: Uranium fraction lost in process.

Charles A Phillips _____ HP # _____ Date 1/26/03

Lang DeBord _____ HP # _____ Date 1/26/06

F-180/227

COPY

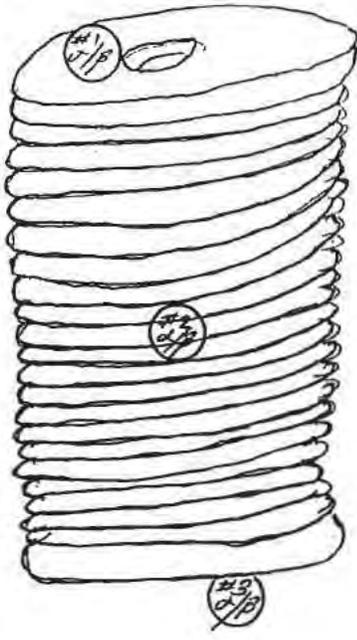
RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 7
JK 2-23-06 JK 2-24-06

LOCATION: (BLDG./AREA/ROOM)	F BLD 1C16 RM 5W	SURVEY NO.	MT-06-0230
PURPOSE:	Judgemental Survey.	RWP NO.	N/A
		DATE:	2/22/06
		TIME:	1530

MAP/DRAWING

Water Filtration Filter



Scanned filter α/β
 No elevated readings
~~detected~~ DETECTED
 2/22/06

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5920/5929	11/15/08
	N/A	

Completed by: (Signature)	<i>[Signature]</i>	Date:	2/22/06
Completed by: (Print Name)	Leonard Kovacs / Julie Kardas	Date:	F 181/227
Counted by: (Signature)	See Attached	HP#	N/A
Counted by: (Print Name)	Sheets	Date:	N/A
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	HP#	
Reviewed/Approved by: (Print Name)	Jerry Taylor	Date:	4-3-06

[Handwritten mark]

T-Building Water filter Judgemental survey 1C16

RSDS# MT-06-0230 RCT: [REDACTED] RCT: 7444

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:	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	1C160101J	5920	[REDACTED]	5929	1	1	2/22/06	14:34	6	120	23
ALPHA	1C160102J	5920		5929	1	2	2/22/06	14:38	7	120	26
ALPHA	1C160103J	5920		5929	1	3	2/22/06	14:42	5	120	19 ✓
BETA	1C160101J	5920		5929	2	1	2/22/06	14:36	98	60	972
BETA	1C160102J	5920		5929	2	2	2/22/06	14:39	73	60	724
BETA	1C160103J	5920		5929	2	3	2/22/06	14:43	71	60	704 ✓
N/A											
COPY											

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: D:\MARSSIM LSC
Raw Results Path: C:\Packard\Tricarb\Results\5801\MARSSIM_Smear_3\20060222_1703.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0230.001 S.
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

COPY F184/227

page 4 of 7
RCH
2-22-06



MARSSIM Snear 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#
2/22/06	5:04:16 PM	-1		10.00	9	8	10	11	635.35	0	21.2	B	3
2/22/06	5:15:06 PM	0		2.00	364	347	0	1	557.41	699	7.5		3
2/22/06	5:17:49 PM	1		2.00	0	0	0	17	379.60	0	0.0		3
2/22/06	5:20:30 PM	2		2.00	0	0	0	19	512.49	0	0.0		3
2/22/06	5:23:14 PM	3		2.00	0	0	0	27	389.91	0	0.0		3

JK

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F-185/229

page 5 of 7
MT-06-0230



Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_096
Batch Ended: 2/22/06 15:14
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: ^{J.K}MT-06-0230 [3] KARDAS 2-22-06 RLH ✓

Detector ID	Sample ID
B1	1
B2	2
B3	3

Alpha Activity		
DPM	σ	flags
0.00	1.87	
0.00	1.85	
0.00	2.24	

Beta Activity		
DPM	σ	flags
0.00	1.19	
0.00	1.12	
2.84	2.65	

J.K

J.K

COPY

F-186/229

page 16 of 17
J.K
MT-06-0230

RADIOLOGICAL SURVEY DATA SHEET

Page 1 of *7* ^{11 Feb 3-31-04} _{4/10/06}

LOCATION: (BLDG./AREA/ROOM) <i>3rd Bldg - Room 29 L63</i>	SURVEY NO. <i>MT-06-345</i>
PURPOSE: <i>Static readings for Res-Rad</i>	RWP NO. <i>N/A</i>
	DATE: <i>3-22-06</i>
	TIME: <i>1500</i>

MAP/DRAWING

See Attached

COPY

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr ($\beta + \eta + \gamma$) 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
<i>2350</i>	<i>5854/5861</i>	<i>7-28-06</i>
 	 	
 	 	
 	 	

Completed by: (Signature) <i>B. Nursick / B. Roe</i>	Date: <i>3-22-06</i>
Completed by: (Print Name) <i>B. NURSICK / B. ROE</i>	
Counted by: (Signature) <i>See Attached</i>	HP# <i>N/A</i> Date: <i>N/A</i>
Counted by: (Print Name) <i>See Attached</i>	<i>F 188/227</i>
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: <i>3-30-06</i>
Reviewed/Approved by: (Print Name) <i>Jerry Taylor</i>	

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				Comments
Sample #	β/γ	Alpha	Tritium	
1	See attached			1C16-0101R
2				1C16-0102R
3				1C16-0103R
4				1C16-0104R
5				1C16-0105R
6				1C16-0106R
7				1C16-0107R
8				1C16-0108R
9				1C16-0109R
10				1C16-0110R
11				1C16-0111R
12				1C16-0112R
13				1C16-0113R
14				1C16-0114R
15				1C16-0115R
16				1C16-0116R
17				1C16-0117R
18	✓	✓	✓	1C16-0118R
N/A				

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

K189/227

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\20060322_1335.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0345.001
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 ✓ B2
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

A 190/227

Protocol# 4 - MARSSIM_Smear_4.lsa

User: 5801

MARSSIM Smear Data

MT-06-0345

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#
3/22/06	1:35:53 PM	-1		10.00	10	9	13	11	624.02	0	19.6	B	4
3/22/06	1:46:44 PM	0		2.00	155	148	0	1	546.34	300	11.8		4
3/22/06	1:49:28 PM	1		2.00	7	7	0	25	499.89	15	86.4		4
3/22/06	1:52:11 PM	2		2.00	12	9	0	55	460.89	24	59.8		4
3/22/06	1:54:54 PM	3		2.00	4	2	0	21	516.04	7	157.5		4
3/22/06	1:57:36 PM	4		2.00	56	51	0	6	540.90	108	21.0		4
3/22/06	2:00:19 PM	5		2.00	11	10	0	45	445.96	24	61.8		4
3/22/06	2:03:00 PM	6		2.00	7	6	0	12	542.84	13	93.6		4
3/22/06	2:05:42 PM	7		2.00	6	6	0	9	540.88	11	106.2		4
3/22/06	2:08:24 PM	8		2.00	7	6	0	22	497.30	15	85.6		4
3/22/06	2:11:08 PM	9		2.00	3	3	0	22	543.60	6	180.1		4
3/22/06	2:13:51 PM	10		2.00	2	2	0	8	569.24	4	257.1		4
3/22/06	2:16:34 PM	11		2.00	2	3	0	12	569.03	4	257.1		4
3/22/06	2:19:18 PM	12		2.00	0	0	0	15	487.44	0	0.0		4
3/22/06	2:22:02 PM	13		2.00	2	2	0	20	391.24	5	257.1		4
3/22/06	2:24:45 PM	14		2.00	0	0	0	25	413.24	0	0.0		4
3/22/06	2:27:28 PM	15		2.00	0	0	0	11	451.51	0	0.0		4
3/22/06	2:30:10 PM	16		2.00	2	2	0	13	505.67	3	331.7		4
3/22/06	2:32:59 PM	17		2.00	0	0	0	39	419.22	0	0.0		4
3/22/06	2:35:42 PM	18		2.00	0	0	0	6	569.37	0	0.0		4

BP

F141/227

COPY

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_062
 Batch Ended: 3/22/06 12:54
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0345 [18] NURSICK 3-22-06 RLH ✓

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.18		0.00	1.32	
A2	2	0.00	2.00		0.00	1.17	
A3	3	0.00	2.26		0.00	1.27	
A4	4	0.00	2.10		0.00	1.21	
B1	5	0.00	1.87		0.00	1.20	
B2	6	0.00	1.83		0.00	1.12	
B3	7	0.00	2.18		0.00	1.33	
B4	8	0.00	2.01		3.04	2.39	
C1	9	0.00	2.07		0.00	1.27	
C2	10	0.00	1.97		2.78	2.30	
C3	11	0.00	2.14		0.45	1.79	
C4	12	0.00	1.98		0.00	1.14	
A1	13	0.00	2.18		0.00	1.32	
A2	14	0.00	2.00		0.00	1.17	
A3	15	0.00	2.30		1.55	2.18	
A4	16	0.00	2.10		0.00	1.21	
B1	17	1.58	1.87		0.00	1.20	
B2	18	0.00	1.87		0.48	1.58	

B2 ✓

B2 ✓

F-192 / 227

[Handwritten signature]

9 of 11 4/10/06
 3-31-06

MT-06-4
 02-3

SOIL ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL11184
 File ID: 25000133.s0
 Priority: Yes

Description\Location

0601180 T-63 T
 Long Count

Collector:

Date Received: 3/28/06
 Date Collected: 3/28/06

Radionuclide		Activity (pCi/g)	MDA
Co-60	*	0	0.21
Cs-137	*	0	0.06
Pb-210		0.65	0.48
Ra-226	*	0.37	0.65
Ac-227 (D)	*	0	0.24
Th-230	*	0.85	5
Th-232 (D)		0.57	0.37
Pu-238	*	0	3.94
Am-241	*	0.01	0.05

Other Nuclides

Radionuclide	Activity (pCi/g)	MDA
Ag-108m	0.01	0.06
Bi-207	0	0.05
Bi-210m	0.02	0.04

Σ DOT 0.01 nCi/g

Instrument type: High Purity Germanium

- 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-238 d 0 pCi/g 11.94 MDA

Date: 3/30/06 Counted By: Analyzed By: Initials *CS*

F 196/227
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10 of 11
4/11/06
3-31-06

MT-06-05
4-10-06
034
M

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL11185
File ID: 25000134.s0
Priority: Yes

Description\Location

0601181 T-63 B
Long Count

Collector:

Date Received: 3/28/06
Date Collected: 3/28/06

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0	0.29
Cs-137		0.04	0.04
Pb-210	*	0.41	0.5
Ra-226	*	0.33	0.71
Ac-227 (D)	*	0	0.28
Th-230	*	0	5.44
Th-232 (D)	*	0.26	0.54
Pu-238	*	0	4.16
Am-241	*	0	0.06

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0.01	0.03
Bi-207	0	0.05
Bi-210m	0.01	0.05

Σ DOT 0.01 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-238 d 0 pCi/g 17.7 MDA

Date: 3/30/06

Counted By:

Analyzed By:

Initials

CP
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F194/227

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL11184
File ID: 25000139.s0
Priority: Yes

Description\Location

0601180 T-63 Top
Long Count

Collector:

Date Received: 04/06/06
Date Collected: 03/28/06

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0.02	0.04
Cs-137	*	0	0.02
Pb-210		0.21	0.15
Ra-226		0.63	0.2
Ac-227 (D)	*	0.06	0.07
Th-230	*	0	1.55
Th-232 (D)		0.48	0.14
Pu-238	*	0	1.25
Am-241	*	0.01	0.02

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0	0.02
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 .03 pCi/g 2.98 pCi/g MDA

F 198 / 227

Date: 04/07/06 Counted By: Analyzed By: Initials GS

COPY

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) T-BLDG-7 Room 63 (1C16)	SURVEY NO. MT-06-0347
PURPOSE: MARSSIM - SCAN	RWP NO. N/A
	DATE: 3-23-06
	TIME: 0800

MAP/DRAWING

INVESTIGATIVE SCAN OF West wall from ceiling down wall approx. 6 feet. Scan performed because suspect liquid leaked onto wall from the room above.

Scanned for alpha & beta. No elevated readings detected during scan.

COPY

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

= mrem/hr neutron

= air sample number

= swipe number

#/alpha or /beta = direct cont. measurement in dpm/100cm²

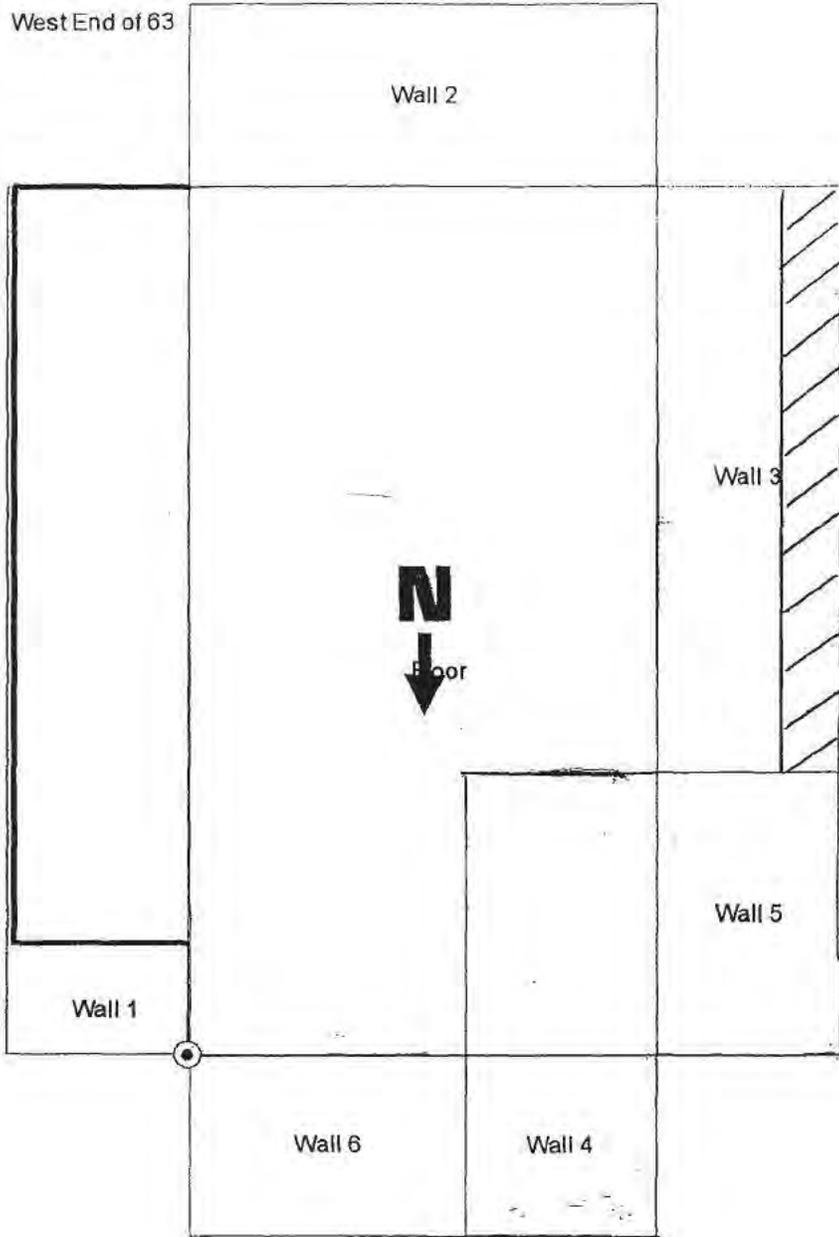
INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L2350-1	5928/5927	5-24-06 3/24/06
	N	
	A	

Completed by: (Signature) <i>George S. Hodges</i>	Date: 3-23-06
Completed by: (Print Name) George S. Hodges / Stephen Richardson	
Counted by: (Signature) <i>N/A</i>	HP#
Counted by: (Print Name) N/A	F199/227
Reviewed/Approved by: (Signature) <i>Jerry Taylor</i>	Date: 3-24-06
Reviewed/Approved by: (Print Name) Jerry Taylor	

ATC

MT-06-0347



3/23/04 Scan
5928/5927 ✓
CALDUE 5/24/04

COPY

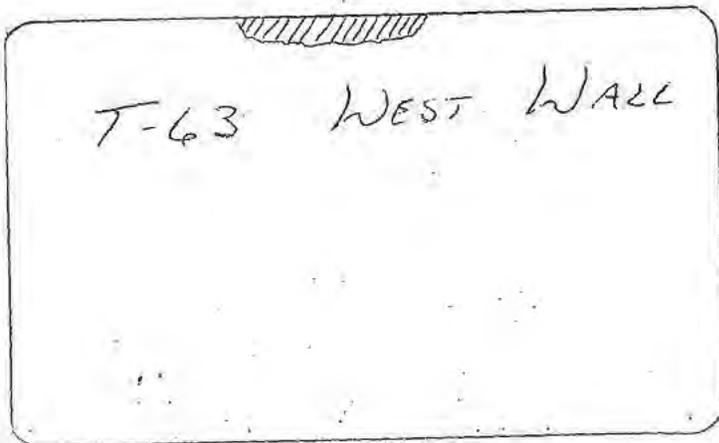
F201/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T-63	1C16	SURVEY NO	MT-06-0449
PURPOSE: POST REMEDIATION SURVEY RESRAD	RWP NO.		N/A	
	DATE:		4-24-06	
	TIME:		1230	

MAP / DRAWING

100% α , β -SCAN PERFORMED ON REMEDIATED AREA. NO ELEVATED ACTIVITY DETECTED



AREA REMEDIATED & CONTINUES UPWARD INTO T-277, VIA EXPANSION JOINT. REFERENCE MT-06-0448

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

COPY

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
2350	5884/5387	1-30-07 H-30-06 5-1-06
	N/A	

Completed by: (Signature)	<i>John Bako</i>	Date:	4-24-06
Completed by: (Print Name)	NEAL REYNOLDS John Bako		
Counted by: (Signature)	N/A	HP#	N/A
Counted by: (Print Name)	N/A		
Reviewed/Approved by: (Signature)	<i>Jerry Taylor</i>	Date:	5-11-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

F202/261

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
1	SEE	ATT	ACHED	IC/60201PK
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16			N/A	
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	Beta	Alpha	Tritium	Comments
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54			N/A	
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				

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 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.
- Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

F203/227

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\20060425_1131.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0449.001
Assay File Name: C:\Packard\TriCarb\Assays\MARSSIM_Smear_2.1sa

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

A Units Reference Date Reference Time

COPY

PAGE 3 of 4
MT-06-0449

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#
4/25/06	11:32:25 AM	-1		10.00	10	10	11	2	610.42	0	19.7	B	2
4/25/06	11:43:15 AM	0		2.00	71	69	3	1	543.06	137	18.2		2
4/25/06	11:45:59 AM	✓1		2.00	0	0	0	0	640.55	0	0.0		2

✓
nr

COPY

F205/
2/227

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MT-06-0449

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_037
Batch Ended: 4/25/06 10:37
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0449 [1] REYNOLDS 4-25-06 RLH ✓

Detector ID	Sample ID
B1 ✓	1

Alpha Activity		
DPM	σ	flags
0.00	1.87	

✓na

Beta Activity		
DPM	σ	flags
0.00	1.20	

✓na

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F-2006/ZZ7

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MT-06-0449

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	TBLDG Rm 63	SURVEY NO.	MT-06-0498
PURPOSE:	ceiling static measurement in Rm 63 RESRAD	RWP NO.	N/A
		DATE:	5/8/06
		TIME:	0955

MAP / DRAWING

Scanned $1m^2$ around each ceiling static point

See attached map

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

F 208 / 227

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5904/5905	3/13/07
 	 	
 	 	
 	 	

Completed by: (Signature)	<i>Wayne Jones</i>	Date:	5/8/06
Completed by: (Print Name)	WAYNE JONES		Georgia Hodges
Counted by: (Signature)	<i>See attached</i>	HP#	N/A
Counted by: (Print Name)		Date:	N/A
Reviewed/Approved by: (Signature)	<i>Jerry Taylor</i>	Date:	5-11-06
Reviewed/Approved by: (Print Name)	Jerry Taylor		

MT-06-0498
Pg 309

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: Mar_081
Batch Ended: 5/8/06 16:04
Cal. Due Date: 11/17/06
Serial Number: 26966-3

Batch ID: MT-06-0498 W. JONES (8) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.18		0.00	1.31	
A2	2	1.79	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	1.89		0.25	1.68	
B2	6	0.00	1.87		0.48	1.58	
B3	7	0.00	2.18		0.00	1.34	
B4	8	0.00	1.97		0.66	1.69	

wj

wj

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F 210/227

Page 1 of 1 *wj*
5/9/06

Rep

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\20060508_1658.results

Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0498.001 ✓

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				

A

1227
5/11/06

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Rt

MT-06-0498 pg 4 of 9

MARSSIM Smear Data

MT-06-0498
pg 5 of 9

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#
5/8/06	4:59:07 PM	-1		10.00	11	10	11	14	610.11	0	19.2	B	1
5/8/06	5:09:57 PM	0		2.00	273	262	0	1	532.05	535	8.8		1
5/8/06	5:12:40 PM	1		2.00	30	14	0	57	608.79	55	30.9		1
5/8/06	5:15:22 PM	2		2.00	6	1	0	41	567.32	12	101.6		1
5/8/06	5:18:04 PM	3		2.00	22	17	0	17	599.05	41	38.0		1
5/8/06	5:20:46 PM	4		2.00	6	3	0	6	612.26	11	101.6		1
5/8/06	5:23:29 PM	5		2.00	41	33	0	3	615.69	74	25.5		1
5/8/06	5:26:11 PM	6		2.00	45	39	0	12	623.15	82	23.8		1
5/8/06	5:28:54 PM	7		2.00	0	0	0	21	547.31	0	0.0		1
5/8/06	5:31:37 PM	8		2.00	3	2	0	7	595.69	5	211.8		1

WJ

COPY

1-21/2/227



1C-16-02
^{5/1/06 K}
 ceiling and upper all static measurement locatons

Area: East End of 63

Label	Type	Surface	LX	LY
1C-16-02-1	Systematic	ceiling-f	1	3
1C-16-02-2	Systematic	ceiling-f	14	3
1C-16-02-3	Systematic	ceiling-f	20	14
1C-16-02-4	Systematic	ceiling-f	14	25
1C-16-02-5	Systematic	Wall 5	19	0
1C-16-02-6	Systematic	N Wall 5	7	0
1C-16-02-7	Systematic	Wall 3	10	0
1C-16-02-8	Systematic	Wall 2	13	0
1C-16-02-9	Systematic	Wall 2 A	1	0
1C-16-02-10	Systematic	Wall 6	11	0

Area: West End of 63

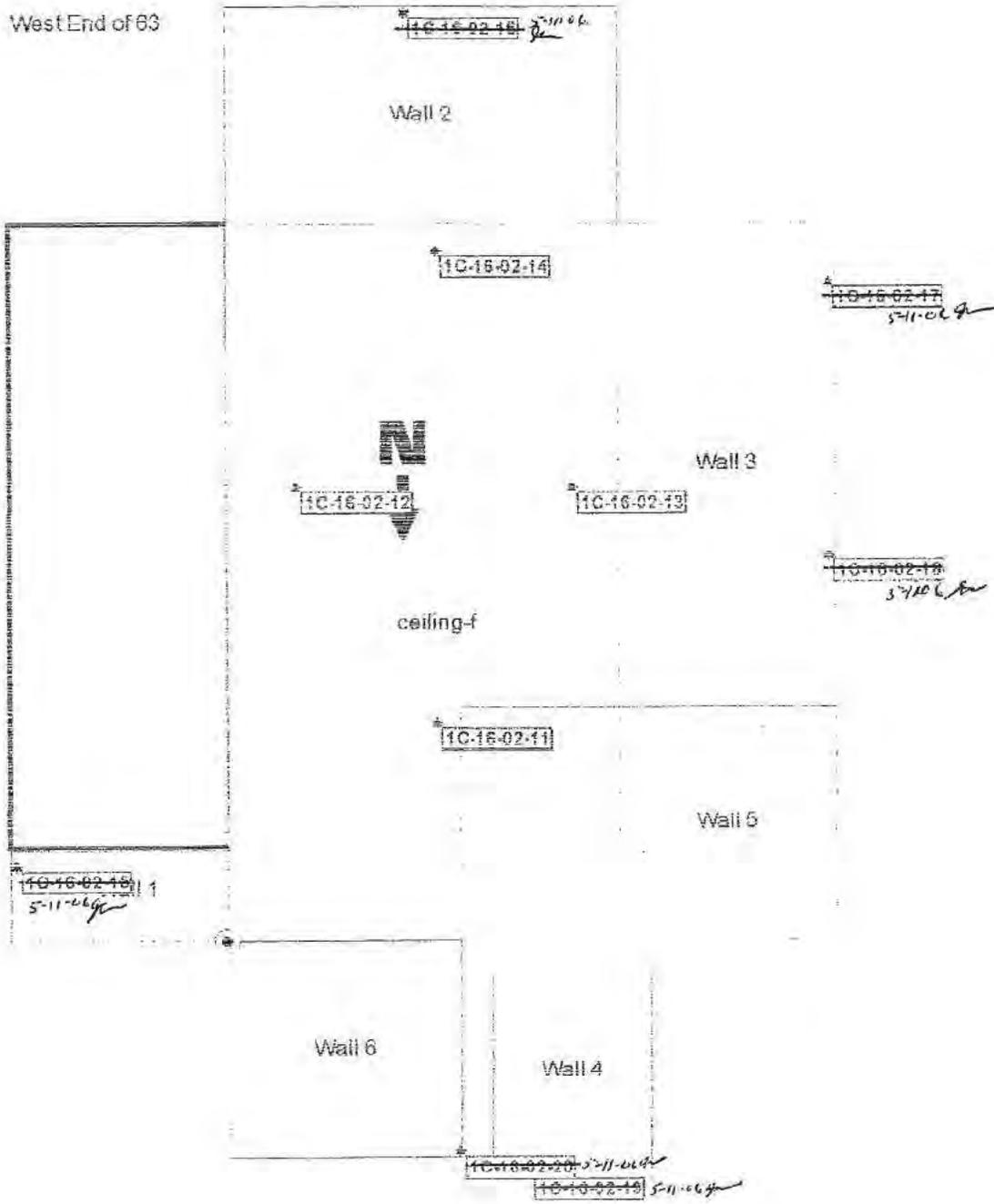
Label	Type	Surface	LX	LY
1C-16-02-11	Systematic	ceiling-f	10	10
1C-16-02-12	Systematic	ceiling-f	3	21
1C-16-02-13	Systematic	ceiling-f	16	21
1C-16-02-14	Systematic	ceiling-f	10	32
1C-16-02-15	Systematic	Wall 1	3	10
1C-16-02-16	Systematic	N Wall 2	8	10
1C-16-02-17	Systematic	Wall 3	3	10
1C-16-02-18	Systematic	Wall 3	15	10
1C-16-02-19	Systematic	Wall 4 A	6	10
1C-16-02-20	Systematic	Wall 6	0	10

COPY

F213/227

1C-16-02

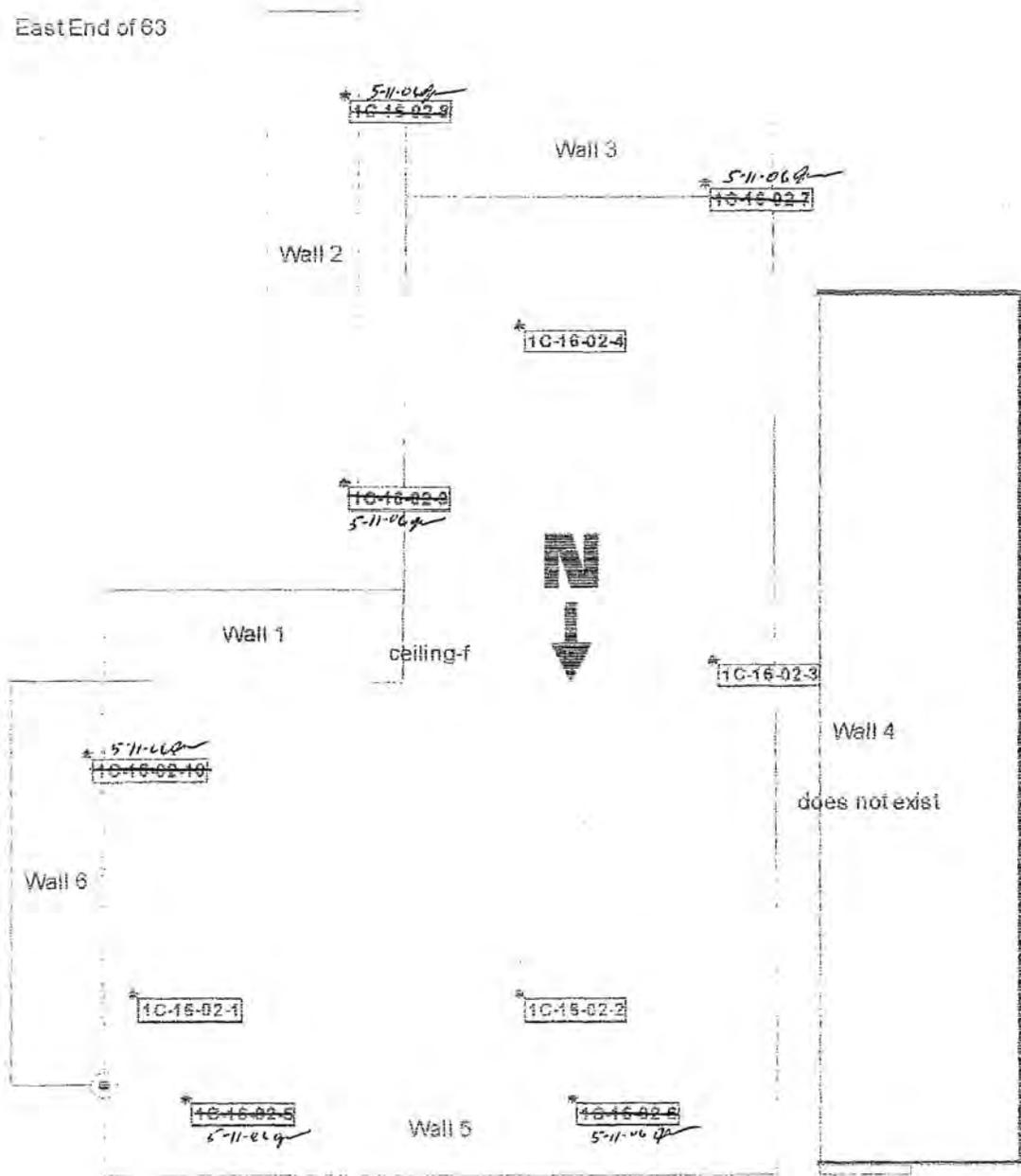
scan an area of approximately 1m2 around each ceiling location



F214/227

COPY

East End of 63



COPY

F 215/227

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG. / ROOM / AREA) T-63 SUMP 13	SURVEY NO. MT-06-0479
PURPOSE: DOSE RATE, FIDLER, LOOSE MATERIAL AND JUDGEMENTAL SAMPLING OF SYS PRS 223 SUMP 13	RWP NO. NA
	DATE: 5-3-06
	TIME: 0720

MAP / DRAWING

SAMPLE TAKEN OF MATERIAL IN BOTTOM OF SUMP PIT ON 4-24-06

SUMP LINER HAS BEEN REMOVED. BULK OF BEDDING MORTAR HAS BEEN REMOVED. SEVERAL INCHES OF LOOSE MATERIAL ARE IN BOTTOM OF SUMP PIT.

FIDLER Results (260 Cpm Background)

Side	Cpm _{gross}	Cpm _{net}
North	224	NDA
East	200	NDA
South	206	NDA
West	240	NDA
Bottom	280	20

100% SCAN OF SUMP PERFORMED, NDA = NO DETECTABLE ACTIVITY.

DOSE RATE <0.005 mR/hr IN AND ON SUMP SURFACES, <5 mR/hr IN AND ON SUMP SURFACES

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
MICRO R	3980	5-13-06
2360 FIDLER	5871/3975	5-18-06
2350	5884/5087	1-30-07
N/A		

Completed by (Signature)	<i>[Signature]</i>	Date: 5-4-06
Completed by (Print Name)	N. Reynolds J. Bako	
Counted by (Signature)	SEE ATTACHED	HP#
Counted by (Print Name)		Date:
Reviewed/Approved by (Signature)	<i>[Signature]</i>	Date: 5-4-06
Reviewed/Approved by (Print Name)	J. HOLLARAWA	

F216/221 *[Signature]*

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β _f	Alpha	Tritium	Comments
1				SYS PRS 2230101J
2				0102J
3				0103J
4				0104J
5				0105J
6				0106J
7				0107J
8				0108J
9				0109J
10				0110J
A				

Removable Contamination				
Swipes (dpm/100cm ²)				
Sample #	β _f	Alpha	Tritium	Comments
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_f, 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 needed, mark N/A.

ML-9620A (4-98) F 217/227

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\20060503_1514.results
Comma-Delimited File Name: C:\Packard\TriCarb\Results\~MARSSIMS\MT-06-0479.001
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

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5/18/227

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MT-06-0479

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#
5/3/06	3:15:17 PM	-1	10.00		10	9	11	4	617.55	0	20.2	B	3
5/3/06	3:26:07 PM	0	2.00		219	206	0	0	562.00	418	9.8		3
5/3/06	3:28:49 PM	1	2.00		0	0	0	0	662.12	0	0.0		3
5/3/06	3:31:31 PM	2	2.00		0	0	0	0	659.38	0	0.0		3
5/3/06	3:34:12 PM	3	2.00		6	6	0	0	652.09	11	96.5		3
5/3/06	3:36:53 PM	4	2.00		3	3	1	0	638.47	6	170.2		3
5/3/06	3:39:36 PM	5	2.00		5	6	0	0	604.42	9	113.1		3
5/3/06	3:42:19 PM	6	2.00		3	3	0	0	639.29	6	169.6		3
5/3/06	3:45:01 PM	7	2.00		1	2	0	0	593.48	2	419.7		3
5/3/06	3:47:43 PM	8	2.00		0	0	1	0	645.96	1	1450.4		3
5/3/06	3:50:26 PM	9	2.00		5	4	0	0	600.19	8	125.1		3
5/3/06	3:53:07 PM	10	2.00		0	0	0	0	632.57	0	0.0		3

Vmr

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F219/227

*PAGE 4 of 8
MT-06-0479*

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_064
 Batch Ended: 5/3/06 14:00
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0479 [10] REYNOLDS 5-3-06 RLH ✓

Detector ID	Sample ID
B1	1
B2	2
B3	3
B4	4
C1	5
C2	6
C3	7
C4	8
D1	9
D2	10

Alpha Activity		
DPM	σ	flags
0.00	1.87	
0.00	1.87	
0.00	2.24	
0.00	1.97	
0.00	2.11	
0.00	1.94	
0.00	2.16	
0.00	1.99	
0.00	2.05	
0.00	2.15	

Beta Activity		
DPM	σ	flags
0.00	1.20	
0.48	1.58	
2.91	2.65	
0.66	1.69	
2.36	2.52	
0.48	1.63	
2.97	2.53	
0.45	1.61	
0.00	1.26	
0.00	1.20	

√na

√na

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 mt-06-0479*



T-63 SYS PRS-233 Sump 13 Judgementals

RSDS# MT-06-0479 RCT: RCT:

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
Alpha	43-68 BKG:	0	EFF:	0.208	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.164	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
ALPHA	PRS2330101J	5884		5887	1	1	5/3/06	7:56	1	120	4
ALPHA	PRS2330102J	5884		5887	1	2	5/3/06	8:02	7	120	27
ALPHA	PRS2330103J	5884		5887	1	3	5/3/06	8:15	7	120	27
ALPHA	PRS2330104J	5884		5887	1	4	5/3/06	8:20	7	120	27
ALPHA	PRS2330105J	5884		5887	1	5	5/3/06	8:26	7	120	27
ALPHA	PRS2330106J	5884		5887	1	6	5/3/06	8:30	10	120	38
ALPHA	PRS2330107J	5884		5887	1	7	5/3/06	9:40	6	120	23
ALPHA	PRS2330108J	5884		5887	1	8	5/3/06	9:46	9	120	34
ALPHA	PRS2330109J	5884		5887	1	9	5/3/06	10:01	9	120	34
ALPHA	PRS2330110J	5884		5887	1	10	5/3/06	10:09	10	120	38
BETA	PRS2330101J	5884		5887	2	1	5/3/06	7:57	158	60	1529
BETA	PRS2330102J	5884		5887	2	2	5/3/06	8:03	132	60	1278
BETA	PRS2330103J	5884		5887	2	3	5/3/06	8:16	172	60	1665
BETA	PRS2330104J	5884		5887	2	4	5/3/06	8:21	165	60	1597
BETA	PRS2330105J	5884		5887	2	5	5/3/06	8:27	150	60	1452
BETA	PRS2330106J	5884		5887	2	6	5/3/06	8:32	165	60	1597
BETA	PRS2330107J	5884		5887	2	7	5/3/06	9:41	132	60	1278
BETA	PRS2330108J	5884		5887	2	8	5/3/06	9:47	127	60	1229
BETA	PRS2330109J	5884		5887	2	9	5/3/06	10:02	148	60	1432
BETA	PRS2330110J	5884		5887	2	10	5/3/06	10:10	146	60	1413

F-231/227

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10 minimum in sump

20 minimum in drain openings

(Supplemental sheet for biased measurements.)

RSDS # MT-06-0479
 RCT INT/HP NR1 JBI

Label	Room	Surface	LX	LY
SYS PRS233 0101J	T-63	NORTH WALL		
0102J		↓		
0103J		EAST		
0104J		↓		
0105J		SOUTH		
0106J		↓		
0107J		WEST		
0108J		↓		
0109J		SOUTHWEST LEDGE		
0110J		NORTH EAST LEDGE		

- J- designator represents measurement as judgmental location
- E-designator represents measurement as potentially elevated activity.
- D-designator represents measurement at a drain.
- V-designator represents measurement on ventilation system.
- U-designator represents measurement on a utility drop.

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F222/227

SOIL ANALYSIS REPORT

Field Sample ID:
 Lab Sample ID: GL11401
 File ID: 1SC04143.s0
 Priority: Yes

Description\Location

0601363 T-63 #2 Sump 13
 Long Count

Collector:

Date Received: 05/01/06

Date Collected: 04/24/06

<u>Radionuclide</u>		<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	*	0	0.06
Cs-137	*	0	0.04
Pb-210	*	0.43	0.53
Ra-226		0.96	0.63
Ac-227 (D)	*	0	0.2
Th-230	*	0.54	5.32
Th-232 (D)		0.24	0.15
Pu-238	*	0	10.83
Am-241	*	0.03	0.06

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0	0.04
Bi-207	0	0.03
Bi-210m	0.01	0.04

Σ
 DOT 0.02 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 .21 pCi/g 7.65 pCi/g MDA

Date: 05/02/06 Counted By: Analyzed By: Initials CS

F223/
1227

COPY

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM)	T-BLDG rm 61, 63	SURVEY NO.	MT-06-0592
PURPOSE: DOSE RATES. 1C15-1C16		RWP NO.	N/A
		DATE:	6/19/06
		TIME:	1400

MAP / DRAWING

SEE ATTACHED.

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

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
Biodet N MREM	1483 / 3981	4/25/07
N/A		
A		

Completed by (Signature)	Date:
<i>[Signature]</i>	6-19-06
Completed by (Print Name)	
J. RICHMONDSON	
Counted by (Signature)	HP#
N/A	
Counted by (Print Name)	Date:
N/A	
Reviewed/Approved by (Signature)	Date:
<i>[Signature]</i>	6-20-06
Reviewed/Approved by (Print Name)	
Ronald K. Daily	F 224/227

J. R. ...
6.19.06

Bicron
1483/3981

4/25/07 cal due

Bicron Readings (micro-Rem Per Hour)

Location	rsds	alpha	beta	tritium	ALPHA	BETA	contact	30 cm	1 meter	background
1C150101S	05-1013	0.00	0.99	3	80	1191	25	25	< 35	25
1C150102S	05-1013	3.55	0.00	29	58	1695				
1C150103S	05-1013	0.00	4.49	9	73	1732				
1C150104S	05-1013	0.00	0.00	16	62	1576				
1C150105S	05-1013	0.00	0.54	19	51	1695				
1C150106S	05-1013	0.00	0.00	13	84	1439				
1C150118S	05-1013	1.57	0.00	0	26	871				
1C150119S	05-1013	4.01	1.62	4	69	1705				
1C150101X	05-1153	n/a	n/a	n/a	412	1781				
1C150102X	05-1153	n/a	n/a	n/a	214	1771				
1C150103X	05-1153	n/a	n/a	n/a	1629	1936				
1C150104X	05-1153	n/a	n/a	n/a	1213	1578				
1C150105X	05-1153	n/a	n/a	n/a	72	1916				
1C150106X	05-1153	n/a	n/a	n/a	645	3000				
1C150107X	05-1153	n/a	n/a	n/a	1893	3204				
1C150108X	05-1153	n/a	n/a	n/a	996	1839				
1C150109X	05-1153	n/a	n/a	n/a	614	1791				
1C150110X	05-1153	n/a	n/a	n/a	717	1829				
1C150101R	06-0346	0.00	0.38	3	46	1839				
1C150102R	06-0346	0.00	0.36	10	61	1636				
1C150103R	06-0346	0.00	0.30	22	53	1810				
1C150104R	06-0346	0.00	0.58	13	34	1762				
1C150105R	06-0346	1.58	1.22	14	118	1897				
1C150106R	06-0346	1.69	0.00	5	34	1278				
1C150107R	06-0346	0.00	0.00	19	34	1403				
1C150108R	06-0346	0.00	0.66	20	42	1597				
1C150109R	06-0346	0.00	0.00	16	38	1220				
1C150110R	06-0346	0.00	0.00	22	57	1742				
1C150111R	06-0346	0.00	0.00	23	23	172				
1C150112R	06-0346	1.64	3.69	9	630	2652				
1C150113R	06-0346	0.00	1.68	5	57	2313				
1C150114R	06-0346	0.00	0.00	21	27	1558				
1C150115R	06-0346	2.01	0.12	16	122	1481				
1C150116R	06-0346	0.00	0.00	16	11	1316				
1C150117R	06-0346	0.00	0.00	13	38	1674				
1C150118R	06-0346	1.69	0.00	10	11	1800	25	25	25	25

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F 226/227

p4 301=4
MT-06-059

6.19.06

Stalder

cal use 4/25/07

BICRON 1483/3981

(micro-rem Per hour)

Location	RSDS	Removable(dpm/100cm ²)			Direct (dpm/100cm ²)		Bicron Readings			
		a	b	H	a	b	contact	30 cm	1 meter	background
1C160101S	05-1092	0.00	0.00	8	64	2039	<5	<5	<5	<5
1C160102S	05-1092	0.00	0.00	0	79	1809				
1C160103S	05-1092	1.77	0.54	5	34	1732				
1C160104S	05-1092	0.00	0.32	3	26	1751				
1C160110S	05-1092	0.00	0.47	4	79	1530				
1C160111S	05-1092	0.00	0.27	0	68	1751				
1C160112S	05-1092	7.49	1.16	14	75	1251				
1C160113S	05-1092	0.00	0.29	5	83	1462				
1C160114S	05-1092	0.00	0.00	0	53	1501				
1C160101X	05-1155	n/a	n/a	n/a	321	2062				
1C160102X	05-1155	n/a	n/a	n/a	42	1636				
1C160103X	05-1155	n/a	n/a	n/a	84	1742				
1C160104X	05-1155	n/a	n/a	n/a	591	2187				
1C160105X	05-1155	n/a	n/a	n/a	343	1810				
1C160106X	05-1155	n/a	n/a	n/a	431	1568				
1C160107X	05-1155	n/a	n/a	n/a	160	1616				
1C160108X	05-1155	n/a	n/a	n/a	275	2255				
1C160109X	05-1155	n/a	n/a	n/a	275	1965				
1C160110X	05-1155	n/a	n/a	n/a	61	1529	<5	<5	<5	<5

COPY

F227/227

pq 4 of 4
MT-06.0591

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T Bldg Corridor 7 (SKSPRS 232)	SURVEY NO.	MT-06-0453
PURPOSE:	MARSSIM - Scan	RWP NO.	NA
		DATE:	4-25-06
		TIME:	0700

MAP / DRAWING

Scanned all accessible areas of sump #12 for alpha & beta. no elevated readings detected during scan.

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 measurement in dnm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L 2350-1	5889/5890	1-17-07
NA		

Completed by: (Signature)	<i>Kenish Carvill</i>	Date:	4-25-06
Completed by: (Print Name)	George Hodges / Alison Hill		
Counted by: (Signature)	<i>GH</i>	HP#	
Counted by: (Print Name)	NA		
Reviewed/Approved by: (Signature)	<i>John Maddox</i>	Date:	5-4-06
Reviewed/Approved by: (Print Name)	J. Hollabaugh		F227A/227

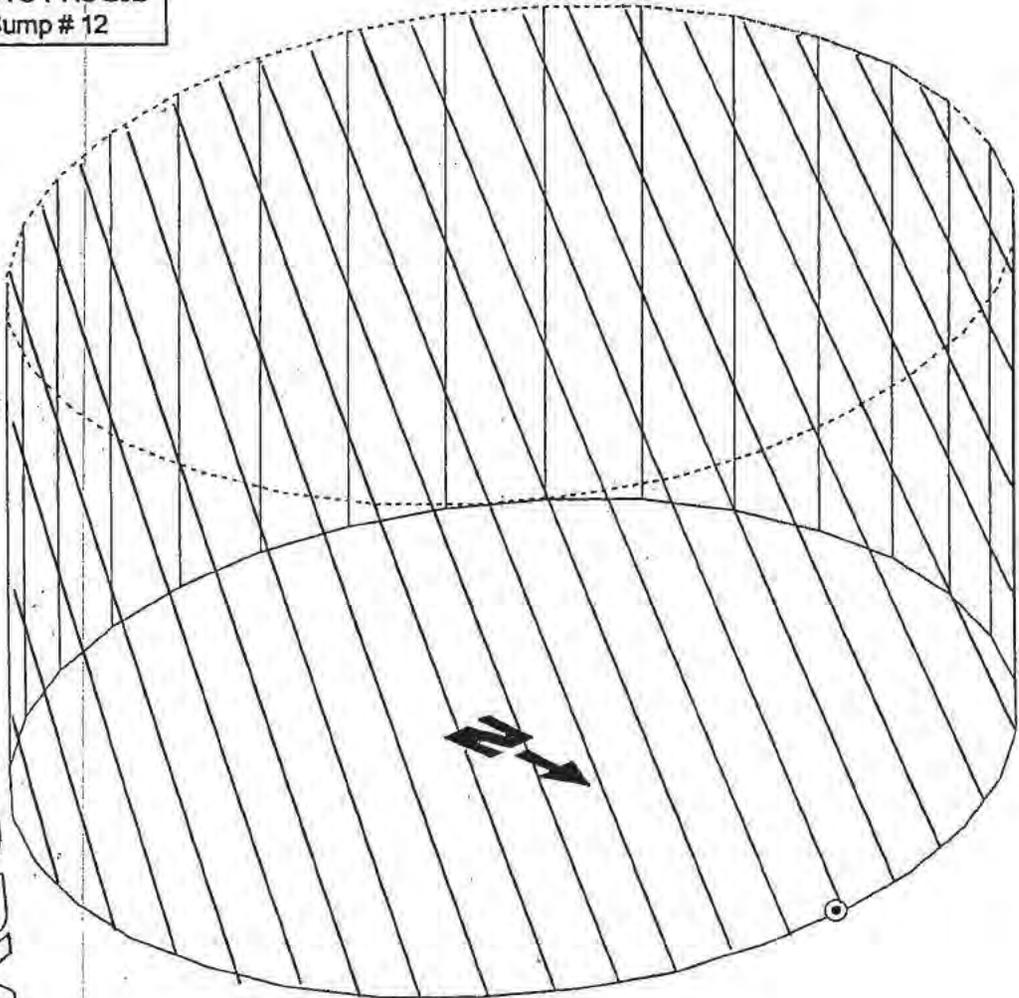
MT-06-0453

SYS-PRS 232
Sump # 12
Corridor 7

Scan 100 % of the sump surface with L2360 w/ fidler probe
10 minimum judgments in sump hole

Surveyed performed 4-25-06
Instrument # 5889/5890 (2350-1)
Cal. due: 1-17-07

SYS-PRS 232
Sump # 12



COPY

Farr/c/27

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	T Bldg Corridor 7 (SKS PRS 232)	SURVEY NO.	MT-06-0454
PURPOSE:	MARSSIM - Judgemental measurements & dose rate measurements	RWP NO.	NA
		DATE:	4-25-06
		TIME:	0930

MAP / DRAWING

Sump #12

dose rate & Fidler readings taken 4-24-06 @ 1400.

background = 5.0 uR/HR

maximum dose rate = ~~0.005 mR/hr~~ 5.0 uR/HR

FIDLER USED FOR INDICATION ONLY. Background = 200cpm (B channel).
No activity above background detected, Entire surface of sump scanned

Sample of loose material collected from bottom of sump

NOTE: BULK MATERIAL SAMPLED FROM BOTTOM OF SUMP (SEE P09)
WAS REMOVED PRIOR TO COMPLETING JUDGEMENTAL READINGS IN
BOTTOM OF SUMP. #7760

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

COPY

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

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L 2350-1	5889/5890	1-17-07
Dicron micro R	3980	5-13-06
2360/Fidler	5871/3975	5-18-06
NA	NA	NA

Completed by: (Signature)	<i>[Signature]</i>	Date:	4-25-06
Completed by: (Print Name)	George Hodges Alan Hill John Bakio		
Counted by: (Signature)	<i>See</i>	HP#	
Counted by: (Print Name)	attached		
Reviewed/Approved by: (Signature)	<i>[Signature]</i>	Date:	5-4-06
Reviewed/Approved by: (Print Name)	J. HOLLABAUGH		P2270/227

RADIOLOGICAL SURVEY DATA SHEET (cont.)

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

COPY

COMMENTS:

N/A

NOTES:

1. Use 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\20060426_0818.results
Comma-Delimited File Name: D:\MARSSIM_LSC\MT-06-0454_001 GM
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

COPIY

F207F/207

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RF

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#
4/26/06	8:18:50 AM	-1		10.00	8	8	14	2	615.60	0	22.1	B	2
4/26/06	8:29:37 AM	0		2.00	65	62	0	1	543.70	127	18.8		2
4/26/06	8:32:19 AM	1		2.00	1	2	0	0	543.32	2	391.8		2
4/26/06	8:35:00 AM	2		2.00	0	0	0	0	557.24	0	0.0		2
4/26/06	8:37:42 AM	3		2.00	0	1	0	0	574.79	1	1501.1		2
4/26/06	8:40:24 AM	4		2.00	1	2	0	0	549.45	3	363.1		2
4/26/06	8:43:06 AM	5		2.00	0	0	0	0	400.77	0	0.0		2
4/26/06	8:45:46 AM	6		2.00	0	0	0	0	496.60	0	0.0		2
4/26/06	8:48:29 AM	7		2.00	0	0	0	0	588.11	0	0.0		2
4/26/06	8:51:10 AM	8		2.00	3	3	0	0	530.05	5	188.3		2
4/26/06	8:53:51 AM	9		2.00	0	0	0	0	533.28	0	0.0		2
4/26/06	8:56:33 AM	10		2.00	1	0	0	0	567.41	2	424.3		2
4/26/06	8:59:14 AM	11		2.00	4	4	0	0	521.29	8	137.4		2
4/26/06	9:01:56 AM	12		2.00	3	3	0	0	510.61	5	188.5		2
4/26/06	9:04:37 AM	13		2.00	0	1	0	0	422.69	0	2701.5		2
4/26/06	9:07:18 AM	14		2.00	0	0	0	0	578.11	0	0.0		2
4/26/06	9:10:01 AM	15		2.00	0	0	0	0	549.74	1	1501.1		2
4/26/06	9:12:43 AM	16		2.00	0	0	0	0	400.38	0	0.0		2
4/26/06	9:15:30 AM	17		2.00	0	0	0	0	407.25	0	0.0		2
4/26/06	9:18:13 AM	18		2.00	0	0	0	0	321.78	0	0.0		2
4/26/06	9:20:55 AM	19		2.00	0	0	0	0	433.43	1	1501.1		2
4/26/06	9:23:36 AM	20		2.00	0	0	0	0	445.03	0	0.0		2

GH

5-26-06
GH
3-28-09

F2276/227

COPY

Smear Analysis

Unit Type: LB4100/W
 Counting Unit ID: Green
 Data file name: Mar_040
 Batch Ended: 4/26/06 6:40
 Cal. Due Date: 11/17/06
 Serial Number: 26966-3

Batch ID: MT-06-0454 [20] HODGES 4-26-06 RLH

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.18		0.00	1.31	
A2	2	0.00	2.01		0.36	1.65	
A3	3	0.00	2.28		0.30	1.78	
A4	4	0.00	2.11		0.58	1.71	
C1	5	0.00	2.08		0.00	1.78	
C2	6	0.00	1.93		0.00	1.16	
C3	7	0.00	2.18		5.48	3.10	
C4	8	0.00	1.98		0.00	1.14	
D1	9	0.00	2.06		0.28	1.77	
D2	10	1.93	2.18		1.36	2.07	
D3	11	0.00	2.09		0.00	1.25	
D4	12	0.00	2.06		1.57	2.03	
C1	13	0.00	2.08		0.00	1.78	
C2	14	1.61	1.93		0.00	1.16	
C3	15	0.00	2.15		1.71	2.19	
C4	16	0.00	2.00		1.58	1.97	
D1	17	0.00	2.07		1.53	2.17	
D2	18	1.93	2.16		0.00	1.20	
D3	19	0.00	2.12		1.50	2.15	
D4	20	0.00	2.04		0.00	1.18	

GH

GH

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7227H/227

COPY

T-Building Judgemental Measurements Unit - SYSPRS232

RSDS# MT-06-454 RCT: RCT:

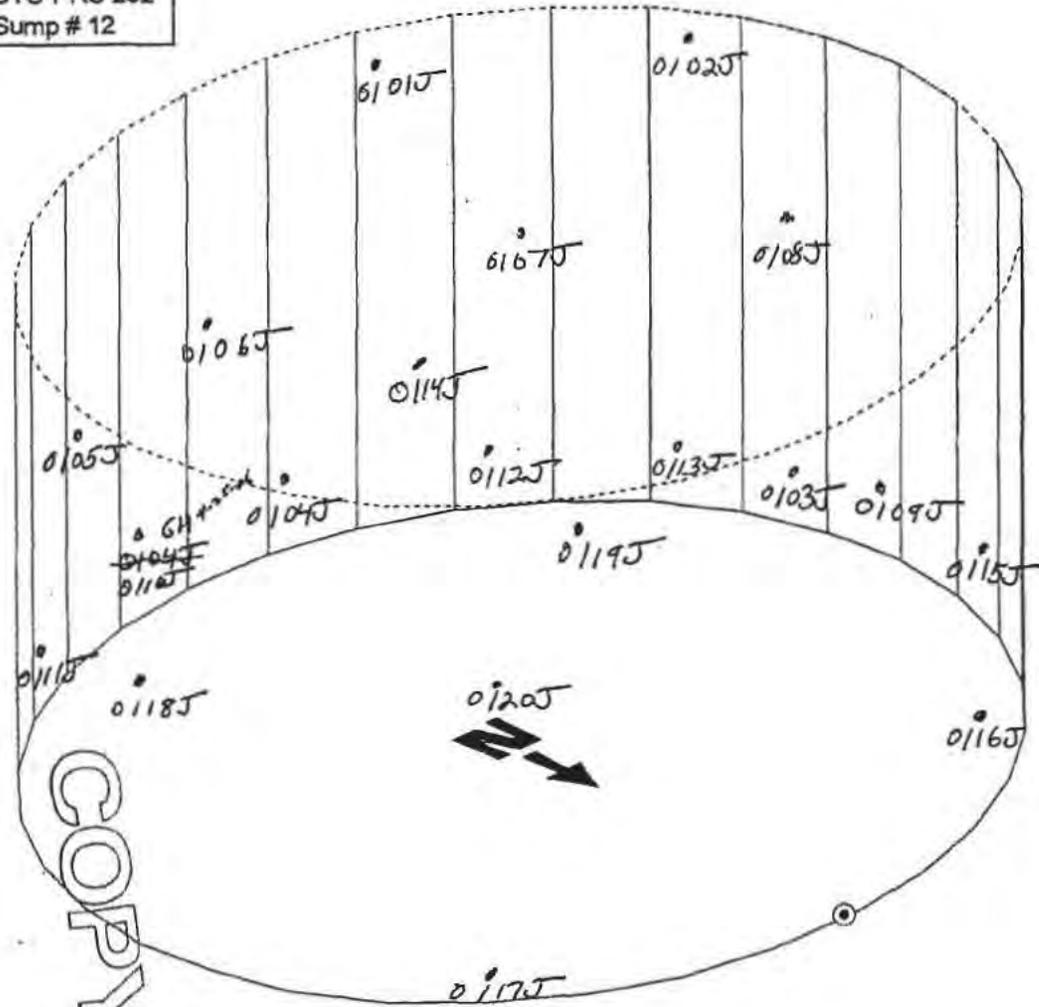
Alpha	43-68 BKG:	0	EFF:	0.2127	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	0	EFF:	0.1695	PROBE AREA:	126	cm ²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	N/A	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	N/A	PROBE AREA:	584	cm ²	Surface Eff:	0.5	Detector #:	4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #	Item	DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	2320101J	5889		5890	1	1	4/25/06	6:44	17	120	63
ALPHA	2320102J	5889		5890	1	2	4/25/06	6:47	6	120	22
ALPHA	2320103J	5889		5890	1	3	4/25/06	6:51	9	120	34
ALPHA	2320104J	5889		5890	1	4	4/25/06	6:57	9	120	34
ALPHA	2320105J	5889		5890	1	5	4/25/06	7:00	6	120	22
ALPHA	2320106J	5889		5890	1	6	4/25/06	7:07	9	120	34
ALPHA	2320107J	5889		5890	1	7	4/25/06	7:14	14	120	52
ALPHA	2320108J	5889		5890	1	8	4/25/06	7:20	9	120	34
ALPHA	2320109J	5889		5890	1	9	4/25/06	7:24	6	120	22
ALPHA	2320110J	5889		5890	1	10	4/25/06	7:28	12	120	45
ALPHA	2320111J	5889		5890	1	11	4/25/06	7:32	6	120	22
ALPHA	2320112J	5889		5890	1	12	4/25/06	7:39	11	120	41
ALPHA	2320113J	5889		5890	1	13	4/25/06	8:58	7	120	26
ALPHA	2320114J	5889		5890	1	14	4/25/06	9:02	9	120	34
ALPHA	2320115J	5889		5890	1	15	4/25/06	9:05	11	120	41
ALPHA	2320116J	5889		5890	1	16	4/25/06	9:09	15	120	56
ALPHA	2320117J	5889		5890	1	17	4/25/06	9:13	10	120	37
ALPHA	2320118J	5889		5890	1	18	4/25/06	9:16	9	120	34
ALPHA	2320119J	5889		5890	1	19	4/25/06	9:20	6	120	22
ALPHA	2320120J	5889		5890	1	20	4/25/06	9:24	5	120	19
BETA	2320101J	5889		5890	2	1	4/25/06	6:45	91	60	852
BETA	2320102J	5889		5890	2	2	4/25/06	6:48	86	60	805
BETA	2320103J	5889		5890	2	3	4/25/06	6:52	101	60	946
BETA	2320104J	5889		5890	2	4	4/25/06	6:58	95	60	890
BETA	2320105J	5889		5890	2	5	4/25/06	7:01	118	60	1105
BETA	2320106J	5889		5890	2	6	4/25/06	7:08	90	60	843
BETA	2320107J	5889		5890	2	7	4/25/06	7:15	117	60	1096
BETA	2320108J	5889		5890	2	8	4/25/06	7:21	127	60	1189
BETA	2320109J	5889		5890	2	9	4/25/06	7:25	131	60	1227
BETA	2320110J	5889		5890	2	10	4/25/06	7:29	126	60	1180
BETA	2320111J	5889		5890	2	11	4/25/06	7:33	168	60	1573
BETA	2320112J	5889		5890	2	12	4/25/06	7:40	199	60	1864
BETA	2320113J	5889		5890	2	13	4/25/06	9:00	216	60	2023
BETA	2320114J	5889		5890	2	14	4/25/06	9:03	208	60	1948
BETA	2320115J	5889		5890	2	15	4/25/06	9:07	209	60	1957
BETA	2320116J	5889		5890	2	16	4/25/06	9:10	269	60	2519
BETA	2320117J	5889		5890	2	17	4/25/06	9:14	212	60	1985
BETA	2320118J	5889		5890	2	18	4/25/06	9:18	165	60	1545
BETA	2320119J	5889		5890	2	19	4/25/06	9:21	217	60	2032
BETA	2320120J	5889		5890	2	20	4/25/06	9:25	212	60	1985
						N/A	COPY				

F227I/227

SYS-PRS 232
Sump # 12
Corridor 7

Scan 100 % of the sump surface with L2360 w/ fidler probe
10 minimum judgments in sump hole

SYS-PRS 232
Sump # 12



Frank/aar

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MT-06-0454

9 of 9

SOIL ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: GL11400
File ID: 1SC04142.s0
Priority: Yes

Description\Location

0601362 T- Corr.7 Sump 12
Long Count

Collector:

Date Received: 05/01/06
Date Collected: 04/24/06

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Co-60	6.28	0.3
Cs-137	9.05	0.23
Pb-210 *	0.76	1.83
Ra-226	3.75	2.19
Ac-227 (D) *	0.23	0.78
Th-230 *	3.12	16.26
Th-232 (D) *	0.61	0.81
Pu-238 *	0	40.61
Am-241	0.29	0.18

Other Nuclides

<u>Radionuclide</u>	<u>Activity (pCi/g)</u>	<u>MDA</u>
Ag-108m	0.04	0.17
Bi-207	0	0.17
Bi-210m	0.44	0.18

Σ DOT 0.08 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 41.89 pCi/g MDA

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Date: 05/02/06

Counted By:

Analyzed By:

Initials

GS

L med 6-26-06
F2278/227